Variations and dynamics of extractive economies: the rural-urban nexus of non-timber forest use in the Bolivian Amazon

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Dekan:	Prof. Dr. G. Becker
Referent:	Prof. Dr. M. Becker
Korreferent:	Prof. Dr. V. Kohler

I fell asleep, and while sleeping, I dreamed that I was a butterfly. But when I awoke, I was uncertain whether I was a man dreaming that I was a butterfly, or whether I was a butterfly dreaming that I was a man, dreaming that I was a butterfly.

Old Chinese paradox

Can we actually 'know' the universe? My God, it's hard enough finding your way around in Chinatown. The point, however, is: Is there anything out there? And why? And must they be so noisy? Finally, there can be no doubt that the one characteristic of 'reality' is that it lacks essence. That is not to say that it has no essence, but merely lacks it.

Professor Woody Allen
cited in *Ways of Worldmaking*
by Nelson Goodman

THIS THESIS IS LOVINGLY DEDICATED TO

Susy Alexandra Guardia Vaca,

mi compañera y fuente de sonrisa, de amistad, de cariño e inspiración;
es la Cachuela que nos demuestra
que no hay ningún obstáculo que no sea superable

the memory of *Yolanda van der Meer*

who never came to see the beauty of the Amazon again

and all those in the rural and peri-urban areas of northern Bolivia
who make their living against the odds of ecological constraints,
versatile markets, and political neglect;
que su futuro sea un porvenir de mejores oportunidades,
de más reconocimiento – tanto político como social –
y de mejor acceso a sus propios recursos naturales y humanos

Contents

Summary

This doctoral dissertation was drawn up within the framework of a joint research effort between the Center of International Forestry Research (CIFOR), the Institute of Forest Policy, Markets and Marketing Section, at the University of Freiburg, and various partner institutions in the northern Bolivian Amazon, among which the Programa Manejo de Bosques de la Amazonía Boliviana (PROMAB) was the host institution.

The study provides a spatially differentiated intertemporal economic analysis of extractive economies in the northern Bolivian Amazon at micro and meso-levels. It includes the unique approach of studying both rural and peri-urban livelihood systems dependent on the commercial extraction of non-timber forest products (NTFPs). The main objectives are 1) to identify temporal and spatial variations as regards income generated from the gathering, processing, and marketing of Brazil nuts, palm hearts, and other NTFPs; 2) to contribute to a better understanding of the rural-urban nexus underlying regional patterns of NTFP use and trade; and 3) to advance a differentiated view on extraction-based livelihood systems against the backdrop of divergent access to natural resources, volatile markets, and scarce governmental or non-governmental support.

The methodological approach encompasses five distinct phases of data collection: 1) village survey: 163 out of a total of about 700 rural settlements were systematically sampled throughout northern Bolivia; 2) rural household survey: 151 randomly sampled households were surveyed in 27 rural settlements; these were purposefully selected in accordance with a settlement stratification derived from the first phase; 3) neighborhood survey, covering 4 out of a total of 16 peripheral neighborhoods of Riberalta, the principal town of the northern Bolivian Amazon; 4) peri-urban household survey: 120 households were selected at random in the four neighborhoods surveyed before; and 5) historical survey: analysis of historical documents available at the National Archive of Sucre and elsewhere in Bolivia.

The dissertation is organized into an introductory chapter including the problem statement, the philosophy of science drawn on, and the presentation of the study region. Ensuing are four thematic chapters, all of which draw on distinct theoretical or analytical frameworks. A synthesis in the sixth chapter is followed by conclusions drawn with respect to the relevance of the findings for NTFP-based development.

Chapter 1 relates the problem addressed to two divergent views of extractivism, viz. an 'evolutionist' and a 'modern' one. While the former considers extractive activities a primitive stage of human development doomed to vanish soon, the latter stresses the development potential inherent to extractivism with respect to the generation of employment and income and the conservation of biodiversity. Deficiencies in contemporary NTFP research are seen in the lack of a livelihoods perspective, the failure to adequately address spatial and temporal variability with respect to forest product extraction, and the poor understanding of the rural-urban interlinkages involved. In terms of the theoretical underpinning, the study adopts a naturalist/constructivist approach, acknowledging the existence of a variety of 'worlds' and the fact that these are 'made'.

Chapter 2 highlights the historical to provide the reader with a general understanding of evolutionary trends in the extractive economies of northern Bolivia. It departs from a revisionist view of the Amazon rubber boom based on a reinterpretation of its microeconomic

foundation. Next to the rubber economy, which had dominated northern Bolivia for more than a century, booms and busts are addressed relating to the exploitation of Peruvian bark, Brazil nut, and other NTFPs. It is shown that extractive economies, which evolved from the onset of the Peruvian bark industry in the early 19th century under mercantilist relations, advanced to a stage of primitive capitalism that characterized the rubber era from the 1860s to the mid-1980s. Only in the wake of the recent rubber collapse, a full-blown capitalist system emerged with the rise of the Brazil nut, palm heart and timber industries. Labor organization, dependence relations, and the rationale of a credit system built into the relations between NTFP extractors and various types of middlemen have altered accordingly.

Chapter 3 focuses on recent developments in the post-rubber era and puts them into a context with the long-term evolutionary trends drawn up before. A model of the historical cycle of forest product extraction in Amazonia is employed to analyze the shifts between divergent extractive activities. The ups and downs in northern Bolivia's extractive economies basically confirm the prediction of the model. It is argued that despite the model's suitability for predicting cycles of individual NTFPs, it fails to acknowledge the dynamism of the variety of different products extractor populations typically rely on. Since the cycles of divergent extractive economies rarely coincide, there is always an NTFP portfolio on which livelihood strategies can be based. It is further demonstrated that, contrary to what the literature suggests, the recent booms in the Brazil nut and palm heart industries benefited not only the owners of processing plants and intermediaries but also the laborers in the NTFP industry and the gatherers.

Chapter 4 draws on the theory of frontier urbanization to elucidate the underlying reasons of rural settlement differentiation and the role rural-urban and rural-rural migration plays therein. A typology is presented which reflects the diversity of settlement types both among large estates and independent communities of rural small producers. Contrary to theory, the latter have not been displaced by large estates. Rather, they increased their share in Brazil nut production – today the region's economic backbone – by expanding their area at the expense of large landowners. In this process road construction played a pivotal role. It is demonstrated that the trade-offs between extractivism, agriculture and wage labor are a function of space. More remote settlements have a stronghold in extractive activities while those in the vicinity of town gear a larger share of their agricultural produce to the market. Recent out-migration from the large estates to independent communities or urban centers is related to the dearth of basic facilities and services in remote frontier areas. It is suggested to advance frontier theory by allowing for cyclical expansion and contraction of the frontier, rather than assuming a linear process of 'opening' and 'closure'.

Chapter 5 focuses on peri-urban households dependent on NTFPs and related migratory patterns. The theoretical framework draws on general migration and urbanization theory, the concept of the rural-urban continuum, and the analysis of peri-urban livelihood strategies. A related typology is presented that distinguishes two exclusively urban-based livelihood strategies from two which are rooted to varying degrees in rural economic activities. The latter imply seasonal migration to the rural areas, in particular to engage in extractive activities. The significance of an rural-urban nexus is underpinned by the substantial income generated from gathering, trading and processing NTFPs. It is demonstrated that NTFP-based income is inversely proportional to the level of formal education of the household head, whereas non-NTFP income is directly proportional to the latter. Yet NTFPs are not the last resort of the poorest sections of the society given that households dependent on them typically belong to the medium-income group. Analysis of migratory patterns reveals the complexity of

rural-urban, urban-urban, and cyclical moves, underscoring the importance of migration as a deliberate strategy in peri-urban livelihood systems.

Chapter 6 seeks to synthesize the main findings from the previous chapters from the perspective of rural-urban links, as well as the distribution of benefits in and the general viability of the NTFP economy in northern Bolivia. It stresses the choice that rural dwellers have between a settlement located closer to town with good access to urban-based amenities but less access to land for agriculture or forest product extraction, and a living in the remoter parts of the region highly endowed with forest resources but poorly equipped with infrastructure and services. Those who have opted for a life in the peri-urban areas, on the other hand, can readily approach such services but typically lack an agricultural basis that could meet their subsistence needs. The increasing urban ownership of forest resources is addressed as a process posing both chances and risks with regard to the distribution of benefits accruing from forest products trade. Finally, NTFP-based livelihood strategies are considered a viable option for both rural and peri-urban dwellers though they help maintain their *status quo* rather than fostering socio-economic development.

Chapter 7 incorporates the conclusions to be drawn for regional development in general and NTFP-based development in particular. It is argued that development based on regional NTFPs has been a rather endogenous process in that neither government agencies nor non-governmental organizations significantly interfered in their trade. Given the general political neglect of the region, the private sector – above all the Brazil nut and, in the future, the timber industries – is anticipated to continue to be the driving agent of change. Since most of the regional economy relies on commodities bound for international markets, their inherent volatility leaves little scope for the industries' active involvement in determining the general terms of trade. Both the NTFP industry and the rural and peri-urban dwellers dependent on it will continuously need to prove their adaptive capabilities in order to address the boom and bust cycles characteristic for extractive economies.

Glossary

Spanish, unless marked with (P) when Portuguese

almacén	(merchandise) store; on a γ *barraca* tantamount to γ *pulpería*
almendra	seeds of *almendro*, the Brazil nut tree (*Bertholletia excelsa*); synonymous with γ *castaña* or *castanha* (P)
Altiplano	highlands of Bolivia, as opposed to the γ *Valles* and the γ *Oriente*
altura	upland area which is not inundated during the rainy season; synonymous with γ *terra firme* (P), as opposed to γ *várzea* (P) or γ *bajío*
anticipo	advance; typically returned in kind (Brazil nuts, palm hearts, or timber); more or less synonymous with *adelanto* or *habilitación*; γ *habilito*
arroba	unit of measure (@), in northern Bolivia typically weighing 11.5 kg
aviador (P)	supplier of an advance payment within the framework of γ *aviamento* (P)
aviamento (P)	system of advance in cash and/or kind in return for the future supply of forest products; synonymous with γ *habilito* in Bolivia
bachillerato	high school diploma
bajío	floodplain; temporarily inundated site synonymous with γ *várzea* (P)
barbecho	forest fallow, in northern Bolivia typically left idle for three to six years
barraca	formerly 'rubber estate'; formerly synonymous with *estación, hacienda gomera,* and *siringal* or *seringal* (P); nowadays unit of forest exploitation yielding various forest products under the control of a γ *patrón*; in a more restricted sense control center of an estate synonymous with γ *barração* (P)
barração (P)	control centre of a γ *barraca* with the main depot for rubber and Brazil nut
barraquero	owner or claimant of a γ *barraca*; synonymous with γ *patrón* or *seringalista* (P)
barrica	unit for measure for in-shell Brazil nuts used in the Province of Nicolás Suárez and in Peru; one *barrica* (approximately 66 kg) equals three γ *cajas*
barrio	neighborhood
barrio marginal	marginal or peripheral neighborhood
básico	elementary school (class 1-5)
beneficiadora	processing plant; in Bolivia chiefly referring to Brazil nut processing plants and, to a lesser extent, palm heart factories
bolacha	rubber ball; semi-cylindrical mass of coagulated rubber typically weighing four to six γ *arrobas* or 30 to 70 kg; synonymous with *plancha* or *pelle* (P)
caboclo (P)	rural dweller in Brazilian Amazonia of Indian or mixed descent; synonymous with γ *ribereño* ('people of the river banks') in Peru, denoting a detribalized Indian or γ *mestizo*; no equivalent term in northern Bolivia
caja	unit of measure for in-shell Brazil nut; the wooden box (51x27x35 cm) typically contains 22(-26) kg
camba	designation of lowland Bolivians, as opposed to γ *kolla*; in a more restricted sense 'civilized Indian', as opposed to γ *salvaje* or *bárbaro*

campesino	often translated 'peasant', but here more aptly called 'agro-extractive small producer'; self-designation of independent rural inhabitants
capataz	overseer, mainly on the rubber estates
cascarilla	'Peruvian bark'; quinine-yielding bark of *Cinchona* spp.; also called *quina*
cascarilleros	gatherers and traders of Peruvian bark; synonymous with *quineros*; γ *cascarilla* or γ *quina*
castaña	seeds of *castaño*, the Brazil nut tree (*Bertholletia excelsa*); synonymous with γ *almendra* or *castanha* (P)
castañal	Brazil nut stand
caucho	typically latex from *Castilla elastica* or *C. ulei*; in Peru also referring to rubber from *Hevea brasiliensis*; synonymous with *siphonia*
cauchero	extractor of γ *caucho* (Bolivia); in Peru, synonymous with γ *patrón* or γ *patrão* (P)
centro castañero	Brazil nut center, situated in the core of a γ *barraca*, accommodating 4-10 γ *zafreros* and perhaps their families
centro gomero	formerly rubber center, synonymous with *colocaçõe* (P); situated in the core of a γ *barraca*, accommodating 4-10 γ *siringueros* and their families
chaco	agricultural field of typically 1-2 ha, cleared through slash-and-burn
chaqueo	preparation of new fields through slash-and-burn (July-September)
chaquero	person who makes a γ *chaco* on a regular basis
charque	salt-dried meat (mostly beef); or salt dried fish (*charque de pescado*)
chicha	more or less fermented beverage made from manioc or maize
colocación	alignment of three γ *estradas*; production unit of a rubber tapper; synonymous with *colocação* (P)
compadrazgo	co-parenthood; institution in which individuals create fictive kinship through ritual sponsorship of a person or object
comunidad campesina	peasant community; officially recognized entity designed to promote rural development; introduced through the 1953 Agrarian Reform Law
contratista	person contracted by a γ *beneficiadora* or γ *patrón*; in charge of recruiting γ *zafreros* to secure a given quantity of raw material (e.g., Brazil nut, palm heart, or timber)
cruceño	native of Santa Cruz de la Sierra, Bolivia
curandero	folk healer
duende	literally 'goblin' or 'imp'; dwarf-size creature also called Curupirá – often with a big straw hat – believed to live in the forest; upon its encounter, human beings are lured into the forest interior whence they will not reappear
empatronado	'subordinated to a patron', freely translated 'captive'; referring to rubber tappers and Brazil nut gatherers working under the control of a patron
enganche	enlistment system, under which laborers were recruited for the rubber estates in the late 19th century; synonymous with *reenganche*
estancia	cattle ranch; small cluster of houses surrounded by pastures
estrada	rubber trail, typically consisting of 80-200 rubber trees in the natural forest; nowadays abandoned or, alternatively, used for the Brazil nut harvest

fábrico	annual rubber production; each of the two rubber seasons (April-June/July and Sept.-Nov./Dec.) are referred to as *medio fábrico*
freguez	contractor in the early rubber era; working with his personnel on a γ *barraca* of a γ *patrón* who provides him with a γ *habilitación*; in a later period synonymous with γ *siringuero*
galpón	shed used for the storage of Brazil nuts
garimpero	person prospecting for gold
garimpo	gold prospecting
goma	rubber from *Hevea brasiliensis*
goma fina	high quality rubber from *Hevea brasiliensis*, as opposed to γ *sernamby*
gomal	rubber stand of *Hevea brasiliensis*
granja	(small) farm focussing on cash crop production
habilitación	advance in cash or kind as part of the γ *habilito* arrangement; more or less synonymous with γ *anticipo* or *adelanto*
habilito	system of advance in cash and/or kind in return for the future supply of forest products; synonymous with γ *aviamento* (P)
hacienda	landed estate
interior	rest of Bolivia outside the northern Bolivian Amazon from the perspective of the latter's inhabitants
intermedio	lower secondary school (class 6-8)
jornal	daily wage, including or excluding rations (*jornal seco*)
jornalero	occasional laborer
kolla	designation of highland Bolivians; mainly of *Aymara* or *Quechua* origin
lata	unit of measure; two *latas* equal one γ *caja*
legua	unit of measure; equivalent to 3-5 km (Bolivia) or 5.57 km (Spain)
marretero	itinerant trader; often the only source of barter and trade in rural areas; synonymous with *marreteiro* (P) or *regatão* (P)
medio	higher secondary school (class 9-12)
mestizo	person of mixed European and Native American ancestry
milreis (P)	old monetary unit of a thousand *reis*, roughly equivalent to US$0.25
mozo	salaried rubber tapper on a γ *barraca* in the early rubber era
noria	self-made well
Oriente	Bolivia's eastern lowlands, as opposed to the γ *valles* and the γ *altiplano*
paceño	native of La Paz, Bolivia
palmito	palm heart, or apical meristem, of several palm species; in Bolivia mainly referring to acaí (*Euterpe precatoria*) if extracted from natural forests, or to peach palm (*Bactris gasipaes*) when cultivated
patrón	formerly 'rubber baron'; nowadays individual or corporate patron, estate owner or claimant, synonymous with γ *barraquero* or *seringalista* (P)
patrão (P)	owner of a rubber trail (Brazil)
pauro	spring; in rural and some (peri-)urban areas important source of fresh water, often situated at the bottom of a steep river bank

payol	platform with a palm thatch roof in a γ *puesto* or γ *centro*; storage facility for Brazil nuts during the γ *zafra* and housing facility for the γ *zafreros*
pueblo	literally 'village' or 'small town' (if not used for 'people'); in northern Bolivia commonly used for the town of Riberalta
puerto de embarque	transshipment point of a γ *barraca*; Brazil nuts delivered there fetch a higher price than those brought to the γ *puestos* or *centros castañeros*
puesto castañero	Brazil nut post, situated in the core of a γ *barraca*, accommodating 1-3 γ *zafreros* and perhaps their families
puesto gomero	formerly rubber post, synonymous with *colocaçõe* (P); situated in the core of a γ *barraca*, accommodating 1-3 γ *siringueros* and their families
pulpería	merchandise store; on a γ *barraca* the monopolized facility for the sale of basic necessities; γ *almacén*
quebradora	female worker in a γ *beneficiadora*, manually recovering the Brazil nut kernels at a piece-work rate by means of a small piston-like machine
quina	'Peruvian bark'; the quinine-yielding bark of *Cinchona* spp.; γ *cascarilla*
quintal	unit of weight; in Bolivia equal to 46 kg (100 pounds @ 460.12 g)
rescatador	self-employed Brazil nut trader or employed broker for Brazil nuts, securing raw material in the rural areas on behalf of a γ *beneficiadora*
ribereño	indigenous descendants of Iberian and Amerindian peoples living along the waterways of the Peruvian Amazon; similar to γ *caboclo* (P) in Brazil
rumbeador	tree-finder prospecting the forest in search of valuable (timber) tree species, e.g. person who opens and cleans rubber and Brazil nut trails (γ *estradas*)
saldo	balance between the value of forest products and the cash/kind advanced on credit within the framework of γ *habilito*; *saldo en favor*, if positive from the extractor's perspective, or *saldo en contra*, if the opposite case
salvaje	savage; 'uncivilized' tropical-forest Indian, as opposed to γ *camba*; synonymous with *bárbaro*
sernamby	impure rubber from the hardened bark runoff of *Hevea brasiliensis;* synonymous with *sernambí* (P) but opposed to γ *goma fina*
siringa	rubber tree (*Hevea brasiliensis*), synonymous with *seringueira* (P)
sirinquero	rubber tapper, synonymous with *picador,*γ *freguez,* or *seringueiro* (P)
sujal	man-made grassland infested by *sujo* (*Imperata brasiliensis*)
tala y quema	slash and burn; agricultural practice of clearing sites for new agricultural fields at the peak of the dry season (July-September)
terra firme (P)	Amazonian upland area which is not inundated during the rainy season; synonymous with γ *altura*, as opposed to γ *várzea* (P) or γ *bajío*
Valles	inter-Andean valleys (mostly around Cochabamba), as opposed to the γ *Altiplano* and the γ *Oriente*
várzea (P)	low-lying Amazonain areas inundated temporarily; synonymous with γ *bajío*
Yungas	undulating landscape at the foothill of the Andes
zafra	in northern Bolivia, collection period for Brazil nuts, lasting from December to March; in the southern Bolivian Amazon, harvesting period for sugarcane

zafrero in northern Bolivia, temporal worker hired to gather Brazil nuts during the γ *zafra*, synonymous with *castanheiro* (P); in the southern Bolivian Amazon, harvester of sugarcane

Abbreviations and Acronyms

ABAN	Asociación de Beneficiadores de Almendra Nacional (formerly: Asociación de Beneficiadores del Noroeste)
ADN	Acción Democrática Nacionalista
ADRA	Agencia de Desarrollo y Recursos Asistenciales
ALADI	Asociación Latinoamericana de Integración
ASL	Agrupaciones Sociales del Lugar
ASPROGOAL	Asociación de Productores de Goma y Almendra
BCB	Banco Central de Bolivia
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
BOLFOR	Proyecto de Manejo Forestal Sostenible
Bs.	Bolivianos (Bolivian currency)
CADEXNOR	Cámara de Exportadores del Norte Boliviano
CAIC	Cooperativa Agrícola Integral 'El Campesino'
CBCFV	Consejo Boliviano para la Certificación Forestal Voluntaria
CDF	Centro de Desarrollo Forestal
CEDLA	Centro de Estudios para el Desarrollo Laboral y Agrario
CEDOIN	Centro de Documentación e Información
CEJIS	Centro de Estudios Jurídicos y de Investigación Social
CFB	Cámara Forestal de Bolivia
CID	Centro de Información para el Desarrollo
CIDOB (1)	Centro de Información y Documentación de Bolivia, La Paz
CIDOB (2)	Confederación Indígena del Oriente, Chaco y Amazonia de Bolivia, Sta. Cruz
CIF	Carrera de Ingeniería Forestal
C.I.F.	Cost, Insurance, Freight (Price)
CIFOR	Center for International Forestry Research
CIMAR	Centro de Investigación y Manejo de Recursos Naturales Renovables
CIPCA	Centro de Investigación y Promoción del Campesinado
CIRABO	Central Indígena Regional Amazónica Boliviana
CNF	Cámara Nacional Forestal
COMIBOL	Corporación Minera de Bolivia
CONDEPA	Conciencia de Patria
CPTI	Centro de Planificación Territorial Indígena
CUMAT	Centro de Investigaciones de la Capacidad de Uso Mayor de la Tierra
DFID	Department for International Development
ESAF	Enhanced Structural Adjustment Facility
FAO	Food and Agricultural Organization of the United Nations
FDC	Fondo de Desarrollo Campesino
FEJUVE	Federación de Juntas Vecinales
FIS	Fondo de Inversión Social

F.O.B.	Free on Board (Export price)
FOBOMADE	Foro Boliviano sobre Medio Ambiente y Desarrollo
FONABOSQUE	Fondo Nacional de Desarrollo Forestal
GDP	Gross Domestic Product
GNP	Gross National Product
GO	Governmental Organization
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HAM	Honorable Alcaldía Municipal
HIPC	Highly Indebted Poor Countries
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis
IBEAS	Instituto Boliviano de Estudio y Acción Social
IBGE	Instituto Brasileiro de Geografia e Estatística
IDB	Inter-American Development Bank
IDS	Institute of Development Studies
IEA	Instituto de Estudos Amazônicos
IIED	International Institute for Environment and Development
ILDIS	Instituto Latinoamericano de Investigaciones Sociales
ILO	International Labor Organization
IMF	International Monetary Fund
INE	Instituto Nacional de Estadística
INPE	Instituto Nacional de Pesquisas Espaciais
INRA (1)	Instituto Nacional de la Reforma Agraria, Bolivia
INRA (2)	International Natural Rubber Agreement
IPHAE	Instituto para el Hombre, Agricultura y Ecología
IRRDB	International Rubber Research and Development Board
IU	Izquierda Unida
IUCN	International Union for the Conservation of Nature
LIDEMA	Liga de Defensa del Medio Ambiente
MBL	Movimiento Bolivia Libre
MDSMA	Ministerio de Desarrollo Sostenible y Medio Ambiente
MIR	Movimiento de Izquierda Revolucionaria
MNR	Movimiento Nacionalista Revolucionario
NEP	New Economic Policy
NFR	Nueva Fuerza Republicana
NGO	Non-Governmental Organization
NRC	National Resources Committee
NTFP	Non-Timber Forest Product
NWFP	Non-Wood Forest Product
OPEC	Organization of the Petroleum Exporting Countries
OTB	Organización Territorial de Base
PDC	Partido Democrata Cristiana

PNUD	Programa de las Naciones Unidas para el Desarrollo (UNDP)
PRA	Participatory Rural Appraisal
PROMAB	Programa Manejo de Bosques de la Amazonía Boliviana
RRA	Rapid Rural Appraisal
SIL	Summer Institute of Linguistics
SL	Sustainable Livelihoods
SNDR	Secretaría Nacional de Desarrollo Rural
SNV	Stichting Nederlandse Vrijwillige
SNRA	Servicio Nacional de Reforma Agraria
SUDHEVEA	Superintendência do Desenvolvimento da Borracha
TCA	Tratado de Cooperación Amazónica
TCO	Tierras Comunitarias de Origen
TIERRA	Taller de Iniciativas en Estudios Rurales y Reforma Agraria
UAGRM	Universidad Autónoma Gabriel René Moreno
UCS	Unidad Cívica Solidaridad
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of International Economic and Social Affairs
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNRISD	United Nations Research Institute for Social Development
VAIPO	Viceministerio de Asuntos Indígenas y Pueblos Originarios
ZONISIG	Proyecto de Zonificación Agroecológica y Establecimiento de una Base de Datos y Red de Sistema de Información Geográfica en Bolivia
$b	Pesos (Bolivian currency)

1

INTRODUCTION

Problems are solved not by giving new information, but by arranging what we have always known.

Ludwig Wittgenstein
Philosophical Investigations, 1951

1.1 Statement of the problem

Extractive economies in the context of tropical deforestation

Tropical forests in Amazonia make up the largest contiguous rain forest area in the world. In addition to their extraordinary variety of animal and plant species, millions of forest dwellers, including indigenous and mestizo populations as well as recent colonists, depend with their livelihoods on these forests. Increasing deforestation in the Amazon thus not only results in a serious threat to the conservation of biodiversity, but also to the survival of social and cultural life forms.[1] International attention was called to these problems in particular in 1988 when three developments brought about a sudden upsurge of public interest in the Amazon: 1) evidence on the increased extent of deforestation through data published by Brazil's National Institute for Spatial Research (INPE), 2) concern about the effects of global warming, spurred by a warm summer in various countries of the Northern Hemisphere that was associated with the forest fires in the Amazon, and 3) the assassination of Chico Mendes, the leader of the rubber tappers movement in Acre, and the ensuing debate on the violation of the rights of rubber tappers and indigenous peoples (Goldemberg and Ribeiro 1990: 23, Homma 1994: 34).

To address the problems outlined above, researchers and development professionals started to explore "alternatives to deforestation" (Anderson 1990). An urgent need was felt to reconcile modern development paradigms with more sustainable forms of land use as practiced by the majority of the Amerindian population and small producers of mixed (*mestizo*) or non-indigenous origin[2]. The problems faced by these traditional rain forest users can be summarized as follows:

[1] Deforestation has been most pronounced at the southern and eastern fringes of the Amazon basin. Notwithstanding the exorbitant rates of deforestation in certain states, above all in the Brazilian Amazon, around 90% of the Amazon forests are still largely intact (cf. Allegretti 1994: 15). Recent studies, though, point to the fact that in addition to the area annually deforested an area of similar size is impoverished by logging and fire (Nepstad *et al.* 1999).

[2] Among the latter, it is especially the Japanese immigrants to Amazonia who provide some of the most striking examples of adaptation to the basin's ecological constraints (see for example Staniford 1973, Hiraoka 1980, Subler and Uhl 1990, Makabe 1999).

> "These populations depend on the rain forest for their survival and have a direct stake in its conservation. However, they currently have little demographic, economic, or political significance: They live in highly dispersed and isolated communities, are materially impoverished and subsist at the margins of the market economy, and are politically disorganized. Furthermore, even today a significant proportion of these populations live in conditions of virtual slavery under a regional form of debt peonage"(Allegretti 1990: 253).

Though considered crucial in the search for alternatives to deforestation, extractive[3] populations have long been neglected by the scientific community. Their complex relationships with the forest have been as poorly understood as the extra-sectoral influences that have a bearing on them. Research on forest-based, extractive activities was lacking to account for evolutionary trends and the underlying dynamic forces (Ruiz Pérez 1995: 2).[4] Furthermore, investigation and development of tropical forests had a rather narrow focus on the production capabilities of forests, in particular as regards timber. As a consequence, the relevance of non-timber forest products (NTFPs) and the environmental services provided by tropical forests have been largely neglected (ibid.). In spite of the longstanding significance of NTFP-based or extractive economies[5], surprisingly little is known about their role at local, regional, and national levels.

This situation partly reversed in the early 1990s when several authors directed their attention to the major significance of what used to be called 'minor' or 'secondary' forest products (e.g., De Beer and McDermott 1989, 1996; Peters *et al.* 1989b; Falconer 1990; FAO 1991, Counsell and Rice 1992, Nepstad and Schwartzman 1992; Panayotou and Ashton 1992; Plotkin and Famolare 1992). The emerging paradigm was that NTFP use meets both conservation and development goals, as expressed by Padoch (1992: 43): "Expanded sales of non-timber forest products could increase the value of forests and consequently both help conservation efforts and enhance the well-being of forest dwellers." A particularly influential study by Peters *et al.* (1989a), based on the evaluation of a one-hectare plot in the Peruvian Amazon, proposed that the long-term financial return from NTFP extraction far outweighed the net present value of timber extraction or forest conversion to cattle pastures and timber plantations.[6] Consequently, it was argued that "the Amazonian region should not be considered to be untouchable, but rather there is a need to identify new types of use that place a value on regional natural resources and which stimulate their conservation" (Allegretti 1994: 16). The ensuing debate on the role of extractivism[7] has initially been confined to the academic arena. Practitioners adopted a wary and cautious stance, as they seemingly preferred to develop the conventional management of tropical forests for timber.

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[3] For a definition of extractive, see Section 0.

[4] In fact, only a handful of studies explicitly deals with the long-term trends in extractive economies (e.g., Homma 1992, 1994; Coomes 1995, Coomes and Barham 1997).

[5] For a definition of extractive economy, see Section 0.

[6] Despite its broad recognition, the study was thoroughly criticized for its methodological underpinning and its generalizing conclusions (e.g., Bodmer *et al.* 1990: 109, Browder 1992c: 227-8, Salafsky *et al.* 1993: 47, Lescure 1996: 194, Southgate *et al.* 1996: 69-70, Crook and Clapp 1998: 135). Another study, based on the valuation of three separate hectares of primary forest in the Ecuadorian Amazon and founded on a similarly problematic methodology, basically confirmed the results from Peru (Grimes *et al.* 1994). However, enquiry in the Brazilian state of Acre showed that broad generalizations are unwarranted, as here "the estimated current per-hectare value of extractive production is somewhat less than that for cattle ranching and agriculture" (Gradwohl and Greenberg 1988: 150). Likewise, comparison of forest product extraction, extensive and intensive agroforestry in Acre revealed that the latter two land use-strategies provide economic returns far outweighing that of extraction (Anderson 1992: 217).

[7] For a definition of extractivism, see Section 0.

The problems outlined in this section can be summarized as follows:

increase in tropical deforestation calls for alternative development strategies

sustainable management of tropical forests is one of the alternatives suggested, but the actual and potential role of non-timber forest products therein remains ambiguous.

The call for extractive reserves, or, two divergent views of extractivism

The controversy on whether or not forest product extraction is an appropriate means, if not an end, of socio-economic development is basically rooted in two divergent views of extractivism.[8] They can be called the 'evolutionary view' (cf. Allegretti 1994: 17) and the 'modern view' of extractivism. The former considers extractive activities as those "which are representative of humanity's past, tending to disappear, to be replaced by agriculture, just as hunting preceded stock raising" (Allegretti 1995: 158). Advocates of the evolutionary view consequently regard extractivism as a primitive stage of humanity.[9] In contrast, the modern view holds that extractivism continues in a variety of development models, as being exemplified by the gathering of edible fungus, lifting gentian roots, tapping maple tree sap, collecting thyme and many other examples of NTFP use in the North, all of which point to the universality of this activity (Lescure *et al.* 1994: 59-60). Its advocates further argue that "in modern extractive systems, there is a wide range of products that are seasonally harvested throughout the year and are selected according to their market value, ease of harvest, and so on. The criteria used by producers/gatherers allow for various options to prevent product extinction regardless of their relative significance" (Rodrigues 1996: 9). Rather than opportunistic and indiscriminate exploitation of forest resources, the 'modern view' implies sound knowledge of extractive populations on both NTFPs and their markets, and management decisions based on it.

Supporters of 'modern' extractivism dominated the debate on possible solutions to the tropical deforestation crisis in the early 1990s. Their twin goal of conservation *and* development gained momentum through the 1992 United Nations Conference on Environment and Development (UNCED) in Rio. While 'sustainable development' became the deliberately elusive and easy-to-subscribe-to development paradigm at global level, relatively few efforts were made to put it into practice at local level. Among them, the call for the creation of so-called extractive reserves[10] received worldwide attention as a purportedly ideal example for the reconcilement of economic, ecological and social needs.

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[8] This is not to be confused with the two basic models of extractivism as suggested by Ruiz Pérez *et al.* (1993: 4), who distinguish 'indigenous extractivism' from 'peasant extractivism'. Such a distinction proved to be of limited use in the context of this study.

[9] One of the key 'evolutionists' is Alfredo K.O. Homma. In his view, "extractivism constitutes a rather weak basis for development, one that finds its justification in the level of poverty of the inhabitants and the market for marginal manpower. It is an economy that is dying out, doomed to disappear, faced with an increasing market for processed products, salary policies vis-à-vis low soil and manpower productivity, population growth, the appearance of other economic alternatives, among many other factors" (1994: 35).

[10] The Brazilian Ministry of Agrarian Reform and Development defines extractive reserves as "forest areas inhabited by extractive populations granted long-term usufruct rights to forest resources which they collectively manage" (Schwartzman 1989: 151). The land is retained by the state and leased to the rubber tappers for an initial minimum period of 30 years to avoid a process of land concentration and deforestation (Richards 1993: 22).

Among the first advocates, Gradwohl and Greenberg (1988: 150), stressed that "extractive reserves offer a mode of forest use that is both immediately economically competitive and sustainable in the long-run." The creation of such reserves was considered the first institutional arrangement securing three prerequisites for the development of extractivism, viz. 1) protection and preservation of rain forest areas, 2) free choice of market involvement, and 3) political participation (Seul 1988: 81). The strive for such reserves to be created on behalf of both Amerindian and non-indigenous extractive populations was strongly backed by national and international NGOs[11] and scientists (e.g., Allegretti and Schwartzman 1987; De Beer and McDermott 1989; Fearnside 1989; Allegretti 1990, 1994, 1995; Schwartzman 1989; Anderson and Ioris 1992b; Ruiz Murrieta and Pinzón Rueda 1995). It was argued that "the establishment of 'extractive reserves' ... provides an exciting new model for institutional mechanisms for securing community forest management" (De Beer and McDermott 1989:134). Others went further and suggested this model to be a real alternative not only for the tropical forests of Latin America but also for Africa and Asia (Ruiz Murrieta and Pinzón Rueda 1995). Their positive – explicitly or implicitly 'modern' – view of extractivism emphasized the ecological sustainability of this land use strategy.[12]

Initial enthusiasm about extractive reserves was soon succeeded by more skeptical views of their long-term prospects (e.g., Torres and Martine 1991; Anderson 1992; Browder 1992a, b; Homma 1992, 1994; Salafsky *et al.* 1993; Clüsener-Godt and Sachs 1994a). Now it was those adhering to the evolutionary view of extractivism who gained the upper hand. In their opinion, the concept of extractive reserves suffered from a lack of economic viability rather than from political antagonism.[13] Their skepticism was nurtured by the emergence of rubber plantations in non-Amazonian Brazil[14] which, in the first half of the 1990s, largely displaced the production in native stands and hence seriously undermined the economic foundation of the reserves (cf. Homma 1994: 52, Assies 1997: 30-4). While the base of extractive economies is indisputably fragile, proponents of such economies argue that this is also the case for other land uses in Amazonia that are environmentally less benign (Anderson and Ioris 1992a: 338). Yet the rubber decline underpinned the view that extractive reserves alone cannot meet rural economic development needs as they are inherently non-intensive and, thus, unable to support dense populations (Geisler and Silberling 1992: 70). This argumentation uncovered the ambiguity of the extractive reserve conception and perhaps the inherent contradiction of conservation *and* development. Two issues prompted clarification: First, are conservation and development conflicting rather than harmonious aims? Second, what, if the

[11] The list of NGOs advocating the use of NTFPs within the framework of extractive reserves reads as the who-is-who of international cooperation. It encompasses Conservation International, Cultural Survival, Friends of the Earth, IUCN, Oxfam, World Resources Institute and WWF, among others (Ruiz Pérez *et al.* 1993: 3, Keck 1995: 414). Actually it was Mary Allegretti, a Paraná anthropologist, and Tony Gross of Oxfam, who, in 1985, attempted to convince Chico Mendes and the rubber tappers to frame their demands for justice with respect to land tenure within an appeal to save the rain forest (Keck 1995: 416).

[12] For a recent comprehensive review of this supposition, see Freese (1997a, 1998).

[13] "In practice ... at least two factors diminish economic returns for extractive populations. First, the high dispersion of most forest resources in Amazonia greatly increases harvesting costs. And second, the dispersion of the very populations that practice forest extraction increases the costs of transport and makes those populations subject to unfavorable terms of trade, historically institutionalized throughout the Amazon region in systems of debt peonage ('aviamento')" (Anderson and Ioris 1992a: 338).

[14] In 1995, the states of São Paulo, Bahia and Mato Grosso accounted for 97% of Brazil's plantation rubber, producing 24,882, 8240 and 6187 tons, respectively (IBAMA, cited in Assies 1997: 33). The share of native rubber in Brazil's overall rubber production dropped from 46% in 1990 to a mere 5% in 1995 (ibid.: 32-3). Yet, Brazilian production of plantation rubber is still far below the theoretical yields of 650,000 tons per annum predicted for the mid-1990s.

'ecologically noble savage' is neither ecologically noble nor a savage (see Redford 1991, Alvard 1993, Redford and Stearman 1993, Homma 1994, Peres 1994, Vayda 1998)?[15]

In the first half of the 1990s, the debate on what kind of evolution may be desirable for extractive populations turned basically into one on development paradigms. 'Evolutionists' like Homma disparaged what he calls 'Neo-extractivism' by stating that "this *cult to poverty*, preaching a return to the past and denying the problems of today, is a demonstration of 'sustainable underdevelopment' for the Amazon" (1994: 36; emphasis added). Advocates of 'modern' extractivism, though, agreed that "extractive reserves should not be established merely to preserve traditional economic activities, but rather to permit these activities to evolve" (Allegretti 1990: 258). Yet strategies how to overcome the 'development trap' imbuing the conception of extractive reserves were less unanimous. Those favoring conservation aspects plead for 'multiple product forest management', i.e. diversification into other sustainable use of the forest, in order to prevent clearance for subsistence agriculture or cash cropping, as well as migration (Richards 1993: 26). On the other hand, Allegretti stressed that diversification is necessary, "but always within the *overriding* prerogatives of conservation" (1990: 258; emphasis added).[16]

It was increasingly doubted that mere extractivism could sustain the residents of extractive reserves on a long-term basis. Such reserves were consequently seen "as a way of 'buying time', until other economic alternatives arise" (Homma 1994: 38).[17] Godoy and Bawa (1993: 216) associated the reserves' viability with the accessibility to markets: "Until rural economies become linked to regional and national markets, the main value of the forest no doubt will continue to come from the wild plants and animals sold or consumed by rural people. Once national, regional and rural economies begin to grow, however, the economic value of the tropical forest will come chiefly from wood, ecological services, amenities, and biological diversity." Though criticized for viewing the collection and consumption of NTFPs as a backward activity with low social status (De Beer and McDermott 1996: 134) – that is expressing a typical 'evolutionary' view – Godoy and Bawa received argumentative support from Dubois. He saw the long-term survival of extractive reserves dependent on 1) diversification of market-oriented extractive activities (including timber exploitation), 2) training of resident population in sustained yield management of forests and agroforests, and 3) increasing local involvement of resident populations in product processing and marketing (1996: 13).

The dilemma of extractive reserves is illustrated by the imaginary line drawn between relatively benign forms of land use such as NTFP extraction on the one hand, and timber extraction, (small-scale) agriculture and cattle raising with essentially higher impact on

[15] The image of an 'ecologically noble savage' refers to the 'Indian strategy' of harmonious cohabitation with nature (cf. Homma 1994: 35). It was criticized that lingering Rousseauistic notions of 'true' native peoples being totally adapted to their environment and languishing in perfect harmony with nature are both incorrect and dangerous (Posey 1992: 32).

[16] Implicitly, many conservationists are opposed to timber extraction from extractive reserves. This attitude was heavily criticized by Homma (1994: 38): "The prohibition of tree felling just for the sake of prohibiting, in order to reach 'zero felling' and please the international ecological community, already imposes a heavy social cost on the Amazon".

[17] Buying time is also seen as the objective of possible alliances between conservationists and extractive populations, whose respective agendas are basically different (Redford and Stearman 1993: 249). In this context it is worthwhile to note that the transitory view of extractivism is not confined to researchers. It is not infrequent that extractive populations themselves strive for their conversion into conventional agriculturists, viewing extractivism as an intermediate phase (Ruiz Pérez *et al*. 1993: 5).

forests on the other. The proposed inclusion of timber extraction[18] and agroforestry or improved subsistence agriculture[19] into the multiples-use management of extractive reserves undermined the core of the conservationists' conception; the new proposition read "development *overrides* conservation". Ironically, the implementation of agroforestry systems, as but one suggested remedy for the economically stagnant extractive reserves, could ultimately result in "extractive reserves without extractivism" (Homma 1994: 52). The shift in the 'extractive paradigm' from conservation to development-based approaches not only became manifest in the growing weight of the 'evolutionists' but affected the 'modernists' as well: In 1989, some of the principal NTFP mentors, namely De Beer and McDermott, still argued that "the form of forest use best compatible with non-timber forest product extraction is conservation. Indeed, under conditions of extensive forest and traditional management these uses were naturally integrated. Today, however, it has become necessary to set aside forest areas for which the primary purpose is conservation of forest habitat and biological diversity" (p. 135). In 1996, though, the same authors stress in the second edition of their groundbreaking study that "non-timber forest products in isolation can not be 'The Solution'. Linkage to agriculture and other land uses is certainly needed" (1996: 134).

The controversy on the viability of extractive reserves focussed chiefly on economic and ecological aspects. The *social* underpinning of the extractive reserves conception was never really challenged; this probably because it is based on the union of principally autonomous extractor households[20]. In contrast, extractivism as a whole has a gloomy past, in particular when focussing on the atrocities of the Amazon rubber boom. Exploitative labor relations, reinforced by a rigid system of debt peonage, have been characteristic for the majority of rubber tappers until recently (Browder 1992b: 34). Lately, it was the general decline of rubber production throughout the Amazon that brought about new social and economic relations. The powers and influence of the former rubber barons or patrons[21] generally eroded while small producers gained increasing autonomy (Clüsener-Godt and Sachs 1994b: 12).

In the late 1990s and early 2000s, a more realistic view is prevalent as to the inherent potential of NTFPs in general and their role within the framework of extractive reserves in particular.[22] The insight that extractive reserves are not stand-alone solutions, nor a panacea to deforestation, but complementary to other land uses was paved by Browder (1992c) and Salafsky *et al.* (1993). Nowadays, this view seems to receive broad acceptance. Still,

[18] For Browder (1992a: 181), "the omission of timber resources from discussions of sustainable extraction in the case of Brazil seems incomprehensible." Though not exclusively referring to extractive reserves, Rodrigues (1996: 9) argues that "the pros and cons of extractivism versus permanent agriculture are still being debated, but perhaps there is a third way: multiple-use forest management which, in particular, includes timber extraction." Ros-Tonen (1999: 181) stresses that "it is through the small-scale extraction of timber *and* non-timber forest products that local people can be given a secure place in the sustainable management of tropical forests." Likewise, Grimes *et al.* (1994: 410) suggest that "it is possible to combine the harvest of NTFPs with timber extraction." Such multiple-use forest management ought to take place in limited fashion and under strict control mechanisms stipulated through management plans (Ruiz Pérez *et al.* 1993: 18).

[19] See, for example, Lescure *et al.* (1994: 80-1).

[20] Browder (1992b: 40) is right in remarking that "upon closer scrutiny we find the category 'extractors' defies definition as a discrete unit of analysis and provides little basis for a general framework of market-oriented extraction." I therefore shall elaborate a more refined typology of rural livelihood strategies based, to varying degrees, on extractive activities (Stoian, in prep.).

[21] The generic word of patrons (*patrones* in Spanish and *patrões* in Portuguese) encompasses a variety of persons, "owning the capital, capable of appropriating large areas and obtaining the manpower necessary for their exploitation" (Lescure *et al.* 1994: 65). "In the context of the Amazonian rubber industry, a patron (individual or company) advances supplies to tappers who live scattered in the forest" (Romanoff 1992: 123).

[22] See, for example, Ruiz Pérez and Arnold (1996), Ruiz Pérez and Byron (1999), Statz (2000).

'evolutionists' like Homma will retain their skeptical attitude towards extractivism, though admitting what they perceive as a "great paradox", namely "that plant extraction is going to subsist for many years in the Amazon, with or without extractive reserves, simply due to the lack of economic options or alternatives" (1994: 54). On the other hand, even idealists among those engaged in advocating 'modern' extractivism have tempered their expectations and seek to carve out the conditions under which extractive economies have proven to be successful alternatives to devastating forms of tropical forest use.

The problems addressed in this section can be summarized as follows:

it is unclear whether conservation and development in the context of extractive reserves are conflicting rather than harmonious goals

in general, pure extractivism is not viable

approaches reconciling 'evolutionary' and 'modern' views of extractivism are lacking.

Extractivism from a livelihoods perspective

While the former section dealt primarily with the role of extractivism within macro-political concepts to curb tropical deforestation, this section will adopt a livelihoods perspective, viewing extractive activities as components of household production strategies that are part of an intrinsic web of social, cultural, and economic relations. It was the downturn of extractive economies in Acre and Rondônia, the Brazilian states to which the international discussion on extractive reserves had largely been confined, that paved the way for a broader view of the role extractivism plays within regional and household economies. It was realized that the breadth and the complexity of relationships between the market, social conditions and the forest could not be grasped with the prevailing product-related methods (Wollenberg 1998: 225). This gave rise to the emergence of livelihoods approaches, within which extractive activities are viewed as being embedded into the broader set of household (economic) activities; these, in turn, are understood as being interrelated with the broader ecological, social, economical, and political context.

Many agencies pursuing one of the emerging livelihoods approaches link their ideas back to the work of Chambers (1987) and Chambers and Conway (1992). They adopt largely the following definition of livelihoods, or some slight variant on this (Carney 1999: 4):

> "A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the long and short term" (Chambers and Conway 1992: 7-8).

As producing net benefits for other livelihoods was considered too unrealistic a demand, the UK Department for International Development (DFID) recently adopted this definition:

> "A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base" (Carney 1999: 8).

Livelihoods approaches can be distinguished into general 'livelihoods approaches' and 'sustainable livelihoods approaches'. To a certain extent the former draw on the farming systems approach (see Ruthenberg 1980, Hildebrand 1982, Shaner *et al.* 1982, Jones and

Wallace 1986). Occasionally the farming systems approach has been linked to forest development (see Poschen-Eiche 1987) and, more recently, to the role NTFPs play in rural economies (see Gunatilake *et al.* 1993, Muchagata 1997). The general livelihoods approach goes beyond the farming systems approach in that it also looks at institutions and processes at the community, regional, national, and international levels. The household is no longer analyzed in isolation from the broader socio-economic and political framework, for "success can only be achieved if a good understanding of the household economy is combined with attention to the policy context" (DFID 2000: 5).

In the second half of the 1990s, the general livelihoods approach has been refined under the umbrella of the 'sustainable livelihoods approach' (see for example Carney 1998, Scoones 1998, Ashley and Carney 1999, Farrington *et al.* 1999). Sustainable livelihoods (SL) are defined as "a way of thinking about the objectives, scope and priorities for development, in order to enhance progress in poverty elimination. SL approaches rest on core principles that stress people-centered, responsive, and multi-level approaches to development" (Ashley and Carney 1999: 1). Though the principal focus is on agriculture, SL approaches can well be linked to NTFP-based development, as their primary concern is poverty alleviation (cf. Farrington *et al.* 1999: 1). They are being employed by various international organizations, such as DFID, FAO, ILO, Oxfam, UNDP, and the World Bank (DFID 2000: 3). The erstwhile chiefly environmental focus of the SL framework has now given way to holistic approaches incorporating environmental, economical, institutional, social and political aspects of sustainability (Ashley and Carney 1999: 33-4).[23]

SL approaches can be traced back to the Sustainable Agriculture and Rural Livelihood (SARL) Program, which was launched in 1986 to better understand the trade-offs relating to livelihood strategies (IIED 1999: 1). The SARL Program was the first major attempt to link sustainable agriculture with rural development through a participatory multi-disciplinary approach. By its very nature, rural development has a strong focus on rural areas. In the course of time, however, it was realized that their interrelation with urban areas was insufficiently understood. In fact, households' livelihoods often include both rural and urban elements (Tacoli 1998: 67). Consequently, it was not only the phenomenon of increasing rural-urban migration that attracted attention but the whole set of exchange and interdependence between rural and urban areas. This recognition had also a bearing on the SARL concept. The term 'rural' was dropped and the approach was widened to account for urban aspects of 'sustainable livelihoods'.

Livelihoods approaches have been largely absent from research on NTFPs, as product-related or ethnobotanical studies prevailed. The former focused on individual NTFPs selected because of their outstanding economic importance. Ethnobotanical studies, on the other hand, produced painstaking records of plant species used by indigenous and mestizo populations.[24] This 'catalogue approach' (Ruiz Pérez 1995: 3) was criticized because the resulting "lists of products ... give little insight into their values and do not provide a basis for determining how these values vary for different users, in different locations and over time" (De Beer and McDermott 1989: 8). Consequently, anthropological and geographical studies gained weight that put the use of wild fauna and flora in an socio-economic and increasingly political framework. It was considered necessary to describe household income generation and

[23] For a recent analysis of sustainable livelihoods, referring to both Northern and Southern countries, see Redclift (2000).
[24] For such an approach in northern Bolivia, see Boom (1987).

resource management in order to understand the role of extraction in Amazonian rural economies (Schwartzman 1989: 161). Yet the economic nature of peasant life in Amazonia remains little studied despite the importance of traditional agriculture and extraction in the regional economy and its relevance to rain forest conservation (Coomes 1992: ii). Economic-quantitative aspects clearly remain the Achilles' heel of many NTFP studies.

Up to the early 1990s, quantitative information on the role NTFPs play in local and household economies was virtually non-existent (Padoch 1992: 178); considerable progress has been made since (see for example FAO 1995, Townson 1995). But even at the turn of this century, Wunder (1999: 2) holds that within the "ample debate about the potential of extractivism as a tool for integrated conservation and development, ... the economic-quantitative side of the issue has been somewhat under-researched." Likewise, the renowned study of Peters *et al.* (1989a), focussing on the 'potential market value' of NTFPs, fails to provide data on the extent to which rural inhabitants engage in forest product extraction and the income they derive from it (Browder 1992c: 228). On the other hand it is considered difficult to quantify a traditional economy, given the dispersion of production and the difficulty of access in the Amazon region, as well as the fact that this economy has a social significance that goes beyond economics, in so far as it is largely geared to subsistence (Allegretti 1995: 165). It appears that all of these shortcomings of NTFP research call implicitly for livelihoods approaches. Though hardly explicitly employed in NTFP studies, livelihoods approaches can prove an excellent conceptual framework for the analysis of "contributions of non-timber forest products to socio-economic development".

The problems focussed on in this section can be summarized as follows:

prevailing approaches of NTFP research often lack a livelihoods perspective

though principally apt for NTFP studies, livelihoods approaches are yet to be shaped to the needs of NTFP-related research and to be employed accordingly

the economic-quantitative side has been underrepresented in NTFP studies to date.

The spatial and temporal dimension of extractive economies

Political economy approaches since the 1970s have been shaped by World-Systems Theory. The theory mainly addresses the imbalances between developed metropolitan and underdeveloped satellite countries (see Frank 1969b: 4). Its fundamental concepts of core, periphery, and semiperiphery are both analytical and spatial (Ciccantell and Bunker 1998: 3). Not only political economy but also neoclassical conceptualizations tend to focus on paradigm-related issues of a general nature and, in spatial matters, broad regional effects rather than local ones (Brown 1991: 5). Since these conceptualizations, in particular political economy approaches, have dominated research on South America, there is a lack of location-specific social and economic data. From a world-systems perspective, Amazonia represents a 'classical' peripheral region, in which "350 years of different extractive economies had briefly enriched various dominant classes but progressively impoverished the entire region ..." (Bunker 1985: 1). But little notion is made how such economies varied across time and space, how the allegedly exploited have adjusted to both the heterogeneity of the Amazon basin and that of the extractive systems imposed on them.

The few studies available on interactions between people and tropical forests have been carried out in a relatively small number of regions. Sierra and Stallings (1998: 136) criticize

that such regional concentration results in an oversimplification of our knowledge about the human dimensions of tropical forest use and deforestation as it highlights particular local or regional patterns. Several authors thus underscore the importance of studying local variation in indigenous agroforestry[25] practices (e.g., Padoch 1987: 88-9, Padoch and Denevan 1988: 99, Coomes and Burt 1997: 27). But only a handful of scholars of extractive economies in Amazonia in general and the rubber boom in particular duly acknowledge the basin's heterogeneity of resource endowment, access to these resources, and socio-economic relations built on their use. Though doubtlessly providing one of the most profound accounts of the rubber boom, Weinstein (1983: 4) unwarrantedly holds that

> "indeed, one of the more striking features of the Amazon is that, for a region of such massive dimensions, it is unusually uniform in its physical and economic characteristics. Therefore, even though this study focuses primarily on the lower Amazon—the subregion that boasted the longest involvement in the rubber trade as well as the region's leading commercial center—most of the conclusions it draws can be generalized for the Amazon as a whole, since the repercussions of the rubber boom were much the same for tappers and traders working just a few miles inland and their counterparts working a thousand miles upstream."

In recent years such generalizations have thoroughly been challenged. Barham and Coomes (1996: 145), for instance, stress that "of particular importance were the geographical variations in local biophysical and social conditions across the basin that gave rise to a variety of distinct relations of extraction and trade, which in turn conditioned the distribution of economic returns to participants and shaped patterns of investment." In addition to the biophysical and social conditions, the economic and political environments with their various linkages from local-level producers to the national capitals and international markets have strongly shaped the living conditions up to the remotest pockets of the basin. Brown (1991: 4) therefore suggests to study the local articulation of world economic and political conditions, donor-nation actions, and policies of Third World governments themselves. But when to avoid broad generalizations, local variation needs to be tackled by a conjunction of similarly styled livelihoods studies that relate local manifestations to national and international policies and market forces wherever necessary.

Spatial variability of resource use in the Amazon is not invariably due to exogenous forces. However, as NTFP studies frequently lack the spatial dimension of natural resource use we know little about the endogenous factors at play. Inter-settlement variation in terms of access to land and markets, resource endowment, and resulting land use systems thus continues to be poorly understood. This is partly due to the dominance of world-system scholars in the inquiry of the Latin American peasantry, as these are mainly concerned with the 'functional dualism' between the subsistence sector of rural small producers and the commodity-producing sector dominated by capitalist enterprises, or, in other words, between the *minifundio* and the *latifundio* (see e.g., Frank 1969a, b; De Janvry and Garramón 1977; Bakx 1988). This dichotomy has blurred the view on differences among rural small producers: "Until recently, little attention was given to land distribution and accumulation trajectories *within* the small holder class of agroforestry producers" (Coomes and Burt 1997: 41). Such differences, though, exist not only across peasant communities but within given settlements. The same authors conclude from the high local variation encountered in a 'traditional Amazonian community' in the Iquitos region that their findings point to the "importance of studying variations in agroforestry systems at the community and household level, and

[25] The vast majority of Amazonian forest dwellers combines agriculture and extractivism. While some authors refer to such practices as 'agroforestry', others, especially those focussing on NTFPs, apply the term 'agroextractivism' (see Almeida 1988, cited in Whitesell 1996: 424). In this sense, 'agroforestry' can be understood as a generic term under which several agro-extractive livelihood strategies can be subsumed.

caution against their promotion for adoption elsewhere without more in-depth study of the origins and evolution of local diversity" (ibid.: 40).

The limited number of NTFP studies explicitly dealing with the spatial distribution or variation of NTFP collection concurs with that view. A case study from southern Cameroon, for example, reports substantial variation in NTFP collection (Ndjebet-Ntamag 1997). A study from the Ecuadorian Amazon points at a maximum transport distance beyond which the value of the forest as a source of NTFPs is zero (Grimes *et al.* 1994: 409). Apart from these few examples, it is the prevailing case study approach – focussing either on a few hectares of forest or one to two sample communities – that largely impedes a more realistic valuation of non-timber forest use at regional or national levels. This is a severe constraint, as any assessment of the impact NTFP collection has on the resource base or of its income-generating potential requires a temporal *and* spatial scale if to be of any significant meaning. Though it is claimed that "scale has been a key analytical point for studies in ecological economics and in human ecology" (Begossi *et al.* 1999: 74)[26], such approaches have not yet translated in meaningful policy recommendations as to NTFP use.

Next to spatial variations extractive economies are subject to temporal variability. This refers to fluctuations both over a number of years and those within a given year. These variations could be discriminated into 'historical cycles' and 'annual cycles' of NTFP use. The former manifest in Homma's (1992: 25) renowned neoclassical model, depicting the historical cycle of forest product extraction in Amazonia. This model can be summarized as follows: "Four main factors contribute to the decline of forest product extraction: (1) the inelastic supply of forest products, (2) harvest rates that exceed regeneration rates, (3) the domestication of the forest product, and (4) the development of industrial substitutes for the product" (Townson 1995: 97). Annual cycles of NTFP use, on the other hand, may be obtained from agricultural calendars that include extractive activities. Generally, only few references are made in literature to the seasonality of NTFP use. Assies (1997: 8-9), for example, suggests the model of an 'agro-extractive cycle' for northern Bolivia, encompassing the seasonal sequence of agricultural and extractive activities. But without data on the effects that the temporal availability of NTFPs has on income generation, such concepts are of little practical use with respect to NTFP development.

Even when explicitly referring to seasonal patterns of NTFP income, such studies are surprisingly conjectural in nature. For example, Salafsky *et al.* (1993: 43) argue that "an ideal extractive system should be based on a mix of products whose availability and demand periods are staggered so as to sustain harvest activities throughout the year." The authors conclude that the sequential nature of forest product harvest seasons enables harvesters to earn steady cash income. An example from the Upper Napo region in Ecuadorian Amazonia seems to support their view in that the lack of a distinct dry season in that area makes NTFPs available throughout the year; a fact believed to signal overall income stability (Grimes *et al.* 1994: 410). Both examples are based on the assumption that a steady flow of products is tantamount to a steady flow of income. This, however, cannot be taken for granted. Rather, NTFP incomes are subject to marked seasonal oscillations for several reasons. First, even if NTFPs are available throughout the year, it is extremely unlikely that each has a comparable income-generating potential. Second, various NTFPs provide significant yields only in alternate years, making NTFP income even more volatile (see Pendelton 1992: 256, Freese

[26] Robson (2000) proves with an example from Nigeria that sustainability is a question of scale: what may be unsustainable at the macro-scale of the nation-state may be sustainable at regional or local scale and *vice versa*.

1998: 105). Third, NTFP extraction is never the sole source of income. Typically it is combined with various kinds of agricultural and off-farm income and these are carefully balanced with each other. Only all the income sources combined draw a realistic picture of the cash income available to extractor households.

Having realized that the majority of NTFP studies are constrained in that they do not adequately address temporal and spatial variations or, more generally, variations and dynamics of NTFP use – the central theme of this study – we can turn to another aspect of space. On aggregate level, one could criticize that such studies have largely neglected the *spatial dimension of human affairs*. Harvey (1985: xi), for instance, holds that "there has been a strong and almost overwhelming predisposition to give time and history priority over space and geography. Marx, Weber, Durkheim, and Marshall all have that in common." This list could well be extended to contemporary Political Economists, Political Ecologists and the like, the majority of whom is mainly concerned with the historical transformation of human societies and the related changes in natural resource use. If explicitly dealt with, the spatial dimension of such resource use is only too often understood in terms of a simple "center vs. periphery" pattern, within which world-system scholars view the periphery as a mere appendix of a capitalist world system.

Harvey, himself a (Neo-)Marxist, adds, "and Marxists, employing a vocabulary appropriate to universal class relations, find neighborhoods, communities, and nations that partition class struggle and capital accumulation into strange configurations of uneven geographical development. Whenever social theorists actively interrogate the meaning of geographical and spatial categories, either they are forced to so many ad hoc adjustments that their theory splinters into incoherency or they are forced to rework very basic propositions" (ibid.). This is exactly the reason why the reader should not expect a new theory on the human dimension of natural resource use in northern Bolivia to emanate from this study. Rather, it will draw on a multitude of – at times conflicting – theories and views to approach the complex reality of a social landscape in Amazonia by providing multi-facetted views on the phenomena in question. Explicitly, this study puts imbalances between center and periphery in the broader context of urban-rural linkages and contradictions without denying that under certain circumstances 'center- periphery' forces may well be at play. But even when adding the spatial dimension to Marxian views by upgrading his central theory to a 'historical-geographical materialism' (Harvey 1985: xii), the constraint persists that not all manifestations of economic behavior in a remote region of the South can be attributed conveniently to its incorporation into a world capitalist system. It goes without saying that reality is more complex, with variations across time *and* space defying a simple classification scheme.

The problems touched upon in this section can be summarized as follows:

spatial variability of NTFP use is largely ignored; this is reflected in broad generalizations derived from studies that are limited in scope and scale, if not constrained by ideology

temporal variations of NTFP use are likewise neglected; the prevailing 'snapshot character' of momentary use situations impedes meaningful policy recommendations

spatial and temporal variations combined are absent from contemporary NTFP studies.

The rural-urban nexus of extractivism in the northern Bolivian Amazon

The previous sections focussed on general aspects of extractivism and extractive economies in Amazonia or elsewhere. In leading to the northern Bolivian Amazon[27], the study area proper, I shall first give a short introduction to the region's economic history before addressing the issues dealt with so far, viz. deforestation, viability of extractivism, rural and peri-urban livelihoods dependent on extraction, as well as temporal and spatial variations of NTFP use.

The northern Bolivian Amazon is a prominent example for a pronounced interdependency between the development of the regional economy and livelihood systems based on the extraction of NTFPs. The region, here also referred to as northern Bolivia, came within reach of the world economy in the mid-19th century through the extraction of Peruvian bark (*Cinchona* spp.) and, more importantly, the upcoming rubber boom at the threshold of the 20th century. Rubber extraction was organized on so-called *barracas*[28], that is rubber estates controlled by a patron (*patrón*). The production system was characterized by pronounced dependency relations rooted in a debt-peonage system that *inter alia* was based on the prohibition of subsistence agriculture. The rubber tappers had to purchase their basic necessities from the patrons at highly inflated prices in return for the rubber tapped. It was only in the wake of the first rubber crisis following World War I that independent rubber tapper communities (*comunidades libres*) came into existence. As restrictions on agriculture on the *barracas* relaxed, agricultural activities were combined with the extraction of rubber (*Hevea brasiliensis* (Willd. ex A.Juss) Muell.-Arg.) and Brazil nut (*Bertholletia excelsa* H.B.K.). This mode of making a living prevailed on both the *barracas* and in independent communities until the mid-1980s when Bolivian rubber production entered its phase of final decline.

The rubber collapse made it difficult to secure a livelihood in the forest. As a consequence, many forest dwellers migrated to one of the region's three towns[29], viz. Riberalta, Cobija, and Guayaramerín. The rural-urban migration flow was partly triggered by the emergence of an urban-based Brazil nut industry, absorbing several thousand low-skill laborers. The majority of ex-forest dwellers settled at the fringes of town, most of all in Riberalta. Life in these peripheral neighborhoods is characterized by low access to basic infrastructure, such as electricity, potable water, and inexpensive public transport. Their residents need to buy most of their foodstuffs as, in contrast to the rural dwellers, their majority lacks access to arable land. In addition, they are subject to a temporal labor regime, as all but a few are deprived of the education needed to enter the formal labor market. This explains why many peripheral households maintain their links with the rural areas, be it through agricultural plots that they work in the proximity of town or through participation in extractive activities. Next to join temporary work teams extracting palm hearts or timber, it is especially the three-month Brazil nut harvest that attracts several thousand urban-based extractivists otherwise deprived of adequate income sources.

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[27] The northern Bolivian Amazon comprises the Department of Pando, the Province of Vaca Diez, and the northernmost part of the Province of Iturralde (see Section 1.4).

[28] The term '*barraca*' refers to both the territorial extension of a rubber estate and its functional center sited around the river-based hut of the owner or patron. Extensions of *barracas* in northern Bolivia vary from anything between 150 and 100,000 hectares. Their size thus compares to the estates in the Peruvian Amazon near Iquitos (cf. Coomes 1995: 111).

[29] In accordance with the definition of cities as urban agglomerations of 100,000 inhabitants and above (Kasarda and Crenshaw 1991: 470), northern Bolivia's three urban centers are referred to as 'towns' throughout the text.

This short picture of extractive economies in northern Bolivia already touched upon some of the issues at stake. Extractivism, for instance, takes place in a largely undisturbed rain forest environment. As a matter of fact, deforestation in the northern Bolivian Amazon is rather negligible (see Section 0). Reasoning on the underlying factors of low deforestation is not unanimous though. Some authors attribute the excellent state of forest preservation to the longstanding extraction of rubber and Brazil nut, resulting in what they perceive a 'social fence' function (e.g., Broekhoven 1996: 85, Henkemans 2000).[30] This view does not take into account that the notoriously poor infrastructure – especially the lack of roads and scarce means of transport – and the resulting lack of market accessibility largely impeded a more intense use of forests and provided little incentive for their conversion to alternate land uses.[31] Kaimowitz likewise links low deforestation in Pando and Vaca Diez to the region's extractive tradition but emphasizes the labor aspect: "The estate owners were interested in keeping poor families from independently clearing forests and farming because those activities competed with the *barracas* for labor. Thus, it should come as no surprise that deforestation in these regions was minimal while the rubber estates held sway" (1997: 539). The latter view, however, fails to acknowledge that agriculture has been playing an important role both on the *barracas* and in independent communities well before the rubber collapse and, in fact, ever since the agrarian reform in 1953. It could even be argued that deforestation due to forest clearance by small producers has somewhat decreased given the rural exodus in the wake of the latest rubber crisis (see sections 4.3 and 4.4). Furthermore, in a notoriously capital-poor region, the high capital expenditure related to forest conversion or more intense forest use is a further disincentive to the predatory exploitation of natural resources (cf. Wittkamp 1993: 77).[32]

In spite of the rubber collapse extractive economies continue to be crucial for securing a livelihood in northern Bolivia. Curiously, there has never been a debate on the creation of extractive reserves comparable to that in the adjacent Brazilian states of Acre and Rondônia. This is due mainly to the political neglect northern Bolivia has historically faced with.[33] As a matter of fact, the Bolivian state has never played an active role in the development of the region (see Letellier 1964: 41-2). No government-sponsored colonization program has been launched to date; nor did tax exemptions or subsidies attract land speculators from outside the region, as happened in Acre and Rondônia (cf. Foweraker 1981: 36, Bakx 1988: 151f,

[30] Low deforestation in the Brazilian state of Acre up until 1980 is likewise associated with the preservationist function of extractivism: "it was the traditional economy, understood here as that set of extractive, agricultural and fishing activities practised by the population since the era of colonization, that assured the maintenance of the forest for future use" (Allegretti 1994: 26-7).

[31] This view can be extended to Bolivia as a whole: "Ironically, poverty has been a key factor in the conservation of Bolivia's biodiversity. Today, Bolivia still has some of the most extensive forests in the world. This is due to a very low human population density, especially in the lowlands, and to a lack of means of accessing and rapidly exploiting the country's natural resources" (Ibisch 1998: 213).

[32] In a review article, Vayda addresses some of the widespread misconceptions of the reasons favoring the preservation of tropical forests, holding that "the simple but powerful argument that the persistence of forest environments inhabited by indigenous farmers and foragers, instead of constituting clear evidence that the people are conservationists imbued with a conservation ethic, may often be construed to result from their not having the numbers, technological capability, and market incentives to destroy their forests" (1998: 574).

[33] As far back as the late 19th century it was held that "this abandonment is so complete that we may say there is no authority existing in these regions [the Beni and Madre de Dios basins], and no tie between its inhabitants and the rest of the nation" (De Rivière 1892: 207). The attempt to improve river navigation in Bolivia's northern region under the Economic and Social Development Plan 1962-1971 has been called "the first constructive plan of development ever to be applied to Beni and Pando" (Fifer 1967: 11). Like many other such plans, it was put on paper but did not materialize to any significant degree.

Browder 1994: 47f, Fearnside 1995: 139-40, Barbosa 2000: 115-8). Though conflicts over land exist between some large landowners and rural small producers in northern Bolivia, they never reached the scale reported from the Brazilian Amazon. In such an environment, social movements like that of the rubber tappers in Acre could not emerge. It therefore does not come as a surprise that the need for creating extractive reserves was never articulated. Beyond such reserves, extractivism continues to be a viable livelihood option; this is reflected in the continuous pull NTFP extraction has on both rural and urban-based extractor populations. Evidently, purely extractive livelihood systems are historical phenomena rather than existing realities (cf. Lescure *et al.* 1994: 75). But the combination of extractive activities with varying degrees of agriculture and/or wage labor has not ceased to be a livelihood basis.

The diversity of livelihood systems in northern Bolivia remains yet to be investigated in depth. In many aspects, they seem to resemble those encountered in Peruvian or Brazilian Amazonia. In Brazil, the main problems faced by extractive populations were summarized as follows:

> "Extractive activities currently show a decreasing importance from the macro-economic point of view. On the other hand, many data demonstrate that they contribute an important part, if not the major part, of the yearly income of forest dwellers. However, the low standard of life of the collectors and the strong social injustice which arises from the patrons-collectors relationships have to be pointed out" (Lescure *et al.* 1994: 69).

The recent rubber decline in both Brazil and Bolivia has brought about a drastic change of coercive patron-client relationships. Today the majority of rural inhabitants in the Amazon lives and works independently of a patron. This does not mean that one-sided power relations between intermediaries and forest product extractors have vanished altogether (see Section 3.8). But the fact remains that rural livelihoods in Amazonia have gained an increasingly autonomous status, implying both risks and opportunities for extractive populations hitherto subject to a debt-peonage system. It is striking, though, how little is known on the economic, let alone socio-cultural, traits of the system as formerly and currently practiced. Stereotypes on the alleged exploitation of NTFP extractors by the patrons prevail, irrespective of the fact that virtually no study provides a detailed cost-benefit analysis of the various actors involved in NTFP trade and the associated relations of interdependence. In the absence of even rough estimates of the costs and benefits incurred, these studies resort to broad conjectures that read, for example, as follows: "The balance of the exchange is unequal, and remains to the sole profit of the patron, which is earned by trading the natural products on one hand, and supplying the collector with different goods on the other" (Lescure *et al.* 1994: 69). Notwithstanding the dearth of economic-quantitative data on patron-client relationships, it is widely held that patrons, intermediaries and the like pocket exorbitant gains at the expense of small NTFP producers. Only few authors stress that a thorough analysis of the economic and social implications of the relationships between patrons or traders and rural small producers should precede them being labeled 'exploitative' (cf. Padoch 1987: 85, 1992: 43; Richards 1993: 25; Smith *et al.* 1995: 79f).[34] Hardly any study points to the recent relaxation of debt-peonage relations that brought about new challenges for Amazonian forest dwellers: "They have a long history of fighting for survival, first against pervasive debt peonage, and later to eke out a living after the collapse of the rubber economy" (Keck 1995: 412). In general terms, it becomes apparent that our knowledge is still insufficient as to the complex relationships

[34] Lescure *et al.* (1994: 76), for instance, argue that wherever itinerant traders replaced the patrons as sole providers of basic necessities, they never assumed the figure of protector as the patrons did. Similar observations were made in northern Bolivia, where rubber tappers experienced the abandonment of a *barraca* as patron rejection (Assies 1997: 17). These are clear hints on the ambiguous role the patrons played for their dependents.

between people and products and their evolutionary trends, and particularly their diachronic properties and evolution (Ruiz Pérez 1995: 3).

A better understanding of extraction-based livelihood strategies in northern Bolivia is further hampered by the lack of firm data at household level. This results in highly speculative assumptions on the role timber and non-timber forest products play in household economies.[35] Boot, for instance, conjectures that the daily income generated through the extraction of NTFPs such as rubber, Brazil nut and jatata (*Geonoma deversa* (Poit.) Kunth) is rather low; he concludes that "these results confirm Browder's (1992[a]) finding that rubber extractors in Amazonia typically earn a cash income barely sufficient to ensure household subsistence" (Boot 1997: 442). As will be shown in Chapter 3, in particular in Section 3.3.2, this conjecture lacks evidence in northern Bolivia, as both Brazil nuts and palm hearts (*Euterpe precatoria* Mart.) – nowadays the second most important NTFP from the northern Bolivian Amazon – generate substantial earnings and are often the chief sources of household income in rural areas.[36] Another study, mainly focusing on recent trends in northern Bolivia's Brazil nut industry, is also quick in making straightforward assumptions on the present situation of extractive populations. Without providing evidence at household level, Assies (1997: 50) sees small Brazil nut producers relegated to a residual role. This is clearly not the case, as will be shown in Chapters 3 through 6 (see also Stoian 1999, 2000). Once again it becomes apparent that the neglect of the economic-quantitative side of NTFP use results in ill-advised inferences and, worse, policy recommendations.

The vast majority of NTFP studies, as mentioned earlier, suffer from a synchronic approach and limited geographic coverage. This also applies to the case of northern Bolivia where the broadest survey so far was made by DHV Consultants in the early 1990s (see DHV 1993a-d). But the survey, like the follow-up studies executed by Broekhoven (1996) and Assies (1997), failed to provide systematic data at household level. Assies accounts for long-terms trends in the extractive economy, but the other two studies take little note of its temporal and spatial dynamics. Consequently, most of the results are fragmentary and the prevailing 'snapshot' character does not provide much insight on the evolutionary trends of NTFP production systems. This increases the tendency to either overestimate or undervalue the actual monetary benefits accruing from NTFP use in the region. In this sense, NTFP studies in northern Bolivia so far reflect the shortcoming generally observed with such studies: Changes and their implications are insufficiently anticipated and hence policies and interventions are prone to be designed in an isolated context (Ruiz Pérez 1995: 2).

Doubtlessly one of the most important agents of change in the extractive economies of northern Bolivia, as elsewhere in Amazonia, is the growing rate of urbanization. Not only has a growing number of NTFP processing plants been erected in urban areas, but forest ownership and people involved in NTFP extraction, processing, and sale are increasingly urban-based. To better understand the rural-urban nexus of non-timber forest use – another central theme of this study – we shall have a short look at some salient features of urbanization in northern Bolivia and Amazonia as a whole: Despite Amazonia's longstanding image as a rural environment of receding rainforests, the region has been predominantly

[35] Similarly, accurate data on income of the rural population in Brazil's North Region, covering most of Brazilian Amazonia, have not been readily available (Schwartzman 1992: 59).

[36] The examples of jatata and rubber are misleading anyway, as the former is an NTFP extracted and processed only very locally, and the latter has not been produced in Bolivia on any significant scale since 1993. Prior to the collapse, however, rubber contributed around half a household's income (Stoian, in prep.).

urbanized since at least 1980 (Browder and Godfrey 1997: 1). Nowadays, around 16 million people live in the Amazon, half of which in urban centers, thus increasing the pressures on the rural population to feed both itself and the city dwellers (Homma 1994: 38). In Brazil's North Region[37], for instance, the share of the urban population increased from 27.7% in 1940 to 57.8% in 1991 (IBGE 1991, cited in Browder and Godfrey 1997: 2). In the northern Bolivian Amazon, it rose from 33.5% in 1950 to a projected 66.5% in 1999 (cf. INE 1976a, b; 1992a, b; 1997e; MDSMA 1996). While census data from urban areas are readily available, this is not necessarily the case for rural areas. Scanty information on population and growth rates, in particular as to the smaller settlements, prevails (Hardoy and Satterthwaite 1981: 202).

In northern Bolivia, the rubber collapse seems to have left an economic void in the rural areas. The rapid growth of peripheral neighborhoods in urban surroundings, in particular in Riberalta, suggests that rural livelihoods have become so vulnerable that desperate inhabitants of the countryside saw no alternative but migrating to one of the urban centers. However, it was largely overlooked that in the first place it was the rubber tapper households from the *barracas* that accounted for the rural exodus. The independent communities, on the other hand, proved demographically more stable, with a good number of them receiving immigrants from the *barracas*, if not return migrants from urban areas (see Section 4.4). Yet the cessation of rubber-based income could only partly be offset by other sources of income. The increasing extraction of palm hearts and timber, from which alternative income is derived, is reported to be non-sustainable (Beekma *et al.* 1996: 35-45). Many rural households therefore continue to rely on an intrinsic web of social, cultural, and economic relations with the urban areas and vice versa.[38] Part of these relations were studied in two surveys conducted in several neighborhoods at Riberalta's periphery (see Van Beijnum 1996, Verheule 1998). For the time being, no study has exclusively been devoted to shed light on the rural-urban nexus inherent in the region's extractive economy. Future predictions of migratory flows – rural-rural, rural-urban or vice versa – and general economic trends are therefore flawed with a lack of empirical evidence.

The problems dwelt upon in this section can be summarized as follows:

the rubber collapse in northern Bolivia fueled the rural exodus; as a result, many ex-forest dwellers live under precarious conditions at the fringes of the regional towns

the rubber decline led to progressively lower incomes from rubber production

income sources alternative to rubber are yet to be developed on a long-term basis

the rural-urban nexus of extraction-based livelihoods is poorly understood and, consequently, relating policy recommendations are ill-advised.

Summary of the problems addressed and resulting research needs

"The ongoing controversy surrounding forest extraction in Amazonia is in large part due to a general lack of knowledge about how it functions" (Anderson and Ioris 1992a: 338). Almost a decade after this statement, not too much seems to have changed. The previous sections have demonstrated that a good part of our notion of Amazonian extractive economies today rests in

[37] The North Region includes the states and former territories of Acre, Amapá, Amazonas, Pará, Rondônia and Roraima.

[38] In Acre, a similar network was encountered that goes well across the rural-urban divide (Schwartzman 1992: 61).

more or less well founded conjectures on their social, cultural, and economic underpinnings. Doubtlessly the body of literature related to NTFP use has swollen considerably. Improvements have been made in that ethnobotanical and general NTFP inventories, which are still indispensable, have increasingly given way to a closer look into the socio-economics of extractivism. Yet the list of questions awaiting answer seems longer than ever.

Before deducting the actual research needs from the problem statement, I shall first summarize the *development* problems faced by the extractive economies of the northern Bolivian Amazon:

harsh living and working conditions in the forest (lack of infrastructure, limited access to public services, health risks, etc.)

lacking or volatile sources of cash income in rural and peri-urban areas

low diversification of the regional economy

lack of self-sufficiency in food production

lacking access to credit beyond the traditional debt peonage system

overexploitation of forest products presently serving as 'buffer commodities'.

The *scientific* problems or research deficits relating to extractive economies were summarized by Ruiz Pérez (1995: 1-3):

most NTFP research is site-specific, sectoral, and synchronic

little is known on the dynamic forces and evolutionary trends of extractive economies

lacking incorporation of interactions between forest and non-forest policies

insufficient understanding of the impacts of regional or international market competition

lack of typologies, general theories, and models as mutually supporting frameworks

overall NTFP-related research is marginal compared to the whole forestry research field.

Based on the development and research problems listed above, the following research needs can be deducted for the case of the northern Bolivian Amazon:

temporal and spatial variations of NTFP use deserve special attention, in particular as regards intra- and inter-settlement variation with respect to land tenure, labor allocation, and household income

the dynamic forces and the mechanisms by which NTFP production systems adapt to various socio-economic environments need to be accounted for

to reach a good understanding of household economies, these need to be analyzed with attention to the market and policy context

to develop functional typologies of various extractive economy situations.

1.2 Objectives, research questions, and structure of the study

Objectives

Being conscious that "scientists rarely influence politicians and the power to shape policies is largely out of their control" (Allegretti 1990: 253), I do not pretend to provide policy makers

with the necessary information to shape policies in accordance with the objectives of poverty alleviation and conservation in a portion of the Amazon rain forest. This does not mean that the study would not contain relevant information permitting to rethink some of the approaches pursued to promote regional development or, specifically, NTFP-based development. The objectives of the study are:

to identify temporal and spatial variations as regards income generated from the gathering, processing, and marketing of Brazil nuts, palm hearts, and other NTFPs in northern Bolivia

to contribute to a better understanding of the rural-urban nexus underlying regional patterns of NTFP use and trade

to advance a differentiated view on extraction-based livelihood systems in the context of divergent access to the resource base, volatile markets, and scarce governmental or non-governmental support.

Being part of the CIFOR/BMZ project titled "Contributions of non-timber forest products to socio-economic development", this study is focussing on NTFPs and the development based on their utilization and marketing. Its foremost concern are NTFPs of commercial importance, be it for barter or sale, as the income-generating potential of NTFPs is believed to contribute, this way or another, to socio-economic development. Marketed NTFPs[39] encompass chiefly Peruvian bark (*Cinchona* spp.), rubber (*Hevea brasiliensis*), caucho (*Castilla ulei* Warb.)[40], Brazil nut (*Bertholletia excelsa*), and palm heart (*Euterpe precatoria*). A good number of further NTFPs is or has been traded, if in smaller scale, and will be dealt with wherever appropriate. I recognize that many more NTFPs are presently extracted from the forests of northern Bolivia, which are often of crucial importance to meet household subsistence needs (see for example DHV 1993a, Verkade 1998, Henkemans, forthcoming). These were not studied in depth for two reasons. First, I am of the opinion that the economic value which is assigned to them according to their supposed substitutive value is of highly speculative nature.[41] Second, comprehensive lists of non-traded NTFPs are doubtlessly of high value in ethnobotanical research, but there is little evidence that local genuine development efforts have successfully been based on them.[42]

Guiding research questions

Taking into account the problems and research deficits outlined in Section 1.1.6, the following questions were formulated so as to guide the research:

Why did/does income derived from gathering, processing, or sale of Brazil nuts and other NTFPs vary across households in rural and peri-urban areas?

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[39] Marketed products are defined as products exchanged between a buyer and a seller involving money or barter transaction and a price (or price equivalent) for the product (Wollenberg and Nawir 1998: 159).

[40] "The genus *Castilla* was first proposed in 1793 by a Spanish botanist posted in Mexico, Vicente Cervantes (an 1805 English translation of Cervantes' report termed the genus *Castilloa*, an error which still frequently appears in literature)" (Edelman 1998: 359).

[41] Theoretically, a decoction of medicinal plants used domestically against headache could be valued by assigning the cash value of an allopathic remedy. This, however, is purely theoretical as the broadly lacking access to health care facilities rather forces rural inhabitants to resort to alternative natural remedies in the absence of a 'traditional' cure.

[42] On the contrary, local development may effectively been hampered through the lists' notion of, for example, medicinal plants which might attract the interest of international pharmaceutical firms. As long as effective national and international mechamisms to curb the unilateral export of germplasm and to safeguard intellectual property rights of forest dwellers are largely lacking, exhaustive NTFP lists can do more harm than good.

Why have different extractive economies evolved since the early 19th century, and in what way did they interact with social, economic, and political changes?

Why and by what means did itinerant traders, middlemen, patrons, and firms establish economic ties and/or dependency relations in the NTFP trade?

What is the added value in NTFP trade and to whom accrue the resulting benefits?

Why did/do agro-extractive households migrate from rural to urban areas whilst others continue to secure their livelihoods in the forest?

What is the impact of increased industrialization in the Brazil nut industry on both the collectors and the laborers of the processing plants?

Terminology and definitions

Terminology on NTFP use is highly varied. In order to avoid ambiguity, it appears worthwhile to provide the reader with some general or, wherever deemed necessary, my own definitions.

Extractive economy *sensu lato* is any economy relying on the extraction of natural resources. These include biotic resources from forests and forest-like landscapes or abiotic resources such as mineral deposits. In the context of this study, the term refers to the extraction of forest products, be they timber or non-timber forest products. That is to say that the term here excludes the removal of tree cover on land destined for conversion to non-forest land use, as well as the mining of mineral deposits as practiced, for instance, in the Carajás iron ore project in Brazilian Amazonia.[43] The term includes all levels of commercial transactions within the context of forest product sale. Households gathering and selling forest products are as much part of an extractive economy, as are middlemen, processors, and wholesalers.

Extractivism is defined "as 'the systems of exploitation of forest products that are intended for sale on the regional (within country), national or international markets'. Extractive activities are distinct from those of a hunter-gatherer society whose products are only for household consumption or for local exchange" (Lescure *et al.* 1994: 59). In the context of the Brazilian Amazon, extractivism usually excludes the large-scale extraction of timber (Rodrigues 1996: 11). Yet small-scale extraction either for household consumption or income generation by small producers is included.

"**Extraction** can be defined as the removal of natural resources with no provision for their replacement" (Anderson 1992: 215; emphasis added). The term 'extractive' is derived from 'extraction', whose conventional use implies a destructive form of resource use. Within the concept of the rubber tappers, however, 'extractive' refers to a specific economic activity that depends on the long-term maintenance of rain forest areas (Allegretti 1990: 261).

Extractive activities (synonymously used with **forest product extraction, NTFP extraction,** or simply **extraction**) are defined as those activities of urban-based or rural households that are related to the gathering, local processing, and sale of forest products. Terminology follows Wunder (1999: 3) in that "the term 'extraction' [synonymous with 'extractive activities' or 'forest product extraction'] will be used for the economic activity that

[43] For more details of this large-scale project, see for example Roberts (1995a, b).

appropriates a physical value; the term 'extractivism' will be used for the wider description of the mode and framework of this productive activity".

Forest products are those products that are extracted from forests and forest-like landscapes without prior cultivation.[44] In contrast, products extracted from managed secondary forests or fallows, such as urucú (*Bixa orellana* L.) or cupuasú (*Theobroma grandiflorum* (Willd. ex Spreng.) Schum.) will be referred to as **fallow products** (see Padoch 1987). A special case are those products which are extracted from plants exempted from clearing a patch of forest that is to be integrated into swiddens; this is often the case with Brazil nut trees (*Bertholletia excelsa*) or motacú palms (*Attalea phalerata* Mart. ex Spreng., formerly *Scheelea principes* (Mart. ex Spreng.) Burret). These plants are not cultivated but represent remnants of the forest; they are therefore classified as forest products.

Non-timber forest products (NTFPs) are all biotic forest products other than timber.[45] Given the intrinsic interdependence between the forests and its waterways, fish also falls under this definition. The study deliberately excludes non-wood benefits of forests that have the character of public goods or transboundary benefits, such as carbon sequestration, climate stabilization, conservation of biodiversity and the like.

NTFP industry in the context of this study refers to the rubber, Brazil nut, and palm heart industries, as only these products are, or have been, industrially processed. The **rubber industry** (synonymous with the **rubber economy**) refers to the wild rubber industry in the Amazon and hence excludes the industries based on the cultivation or manufacturing of rubber. The rubber industry here is "the network of collecting, trading, and transporting rubber in exchange for imported goods" (Stanfield 1998: 215). Consequently, the **Brazil nut industry** (or shelling industry) and the **palm heart industry** (or canning industry) are the networks of collecting, trading, and transporting Brazil nuts and palm hearts, respectively, in exchange for cash or kind. The **forest-based industry** is the NTFP and the timber industries combined.

Economic is a compound of two meanings that have nothing in common (Polanyi 1977: 19): "The first meaning, the formal, springs from the logical character of the means-ends relationship, as in *economizing* or *economical*; from this meaning springs the scarcity definition of *economic*: The second, the substantive meaning[46], points to the elemental fact that human beings, like all other living things, cannot exist for any length of time without a physical environment that sustains them; this is the origin of the substantive definition of *economic*" (ibid.). In the context of this study, I follow Polanyi in that "to study human

[44] Evidently, forest products can be defined in various ways (e.g., De Beer and McDermott 1989: 17-8, FAO 1991: 1-3, Wickens 1991: 3). A somewhat bizarre definition of "whatever forest product" includes "*slaves*, drugs, rubber, food, timber, coca leaves, gold" (Hugh-Jones 1992: 49; emphasis added).

[45] The terms non-timber forest products (NTFPs) and non-wood forest products (NWFPs) are often used synonymously. The chief distinguishing characteristic is the inclusion or exclusion of firewood. This differentiation is imperative in arid and semi-arid climates or, generally spoken, in regions with limited forest cover where the need for firewood often exceeds that for timber. In the humid forest zone, however, where firewood is typically abundant, it seems preferable to group firewood under forest products other than timber and, hence, to apply the term NTFPs. For a more lengthy discussion of the pros and cons of the various definitions, see De Beer and McDermott (1989: 17-8) and Ros-Tonen *et al.* (1995: 7-8).

[46] The concept of the 'substantive economy' is central in Polanyi's argumentation. He defines it as follows: "The substantive economy must be understood as being constituted on two levels: one is the interaction between man and his surroundings; the other is the institutionalization of that process" (Polanyi 1977: 31). Though the two are regarded as inseparable, they are treated separately for the sake of analysis (ibid.).

livelihood is to study the economy in this substantive sense of the term, and this is the sense in which *economic* is used throughout this book" (ibid.).

This study deals predominantly with income from forest products. **Forest-based income** is understood here as all income derived from the gathering, processing, and sale of forest products, regardless of the location of the transaction. Similarly, **NTFP-based income** refers to the income generated through collecting, processing, and trading rubber, Brazil nut, palm heart, or other NTFPs. **Rural income**, on the other hand, is all income derived from rural-based activities such as forest product extraction, agriculture, or wage labor in the rural area. **Urban income**, in turn, encompasses all urban income sources, such as salaries or wages, rent, remittances and the like.

Organization of the dissertation

The dissertation comprises an introductory chapter with the problem statement, the philosophy of science drawn on, and the presentation of the study region. Ensuing are four thematic chapters, all of which refer to divergent theoretical or analytical frameworks. They are laid out in the form of articles to be published shortly but were revised and partly expanded for the purpose of this study. Chapter 2 highlights the historical to provide the reader with a general understanding of the evolutionary trends in the extractive economies of northern Bolivia. It departs from a revisionist view of the Amazon rubber boom based on a reinterpretation of its microeconomic foundation. Emphasis is put on the rubber economy that had dominated northern Bolivia for more than a century; booms and busts in economies related to the exploitation of Peruvian bark, Brazil nut, and other NTFPs are likewise addressed. Chapter 3 employs a model of the historical cycle of forest product extraction in Amazonia to analyze recent shifts in forest-based industries in the wake of the Bolivian rubber collapse. Chapter 4 draws on the theory of frontier urbanization to elucidate the underlying reasons of the differentiation of rural settlements and the role rural-urban and rural-rural migration plays therein. It entails a typology of rural settlements that reflects the conversion of large rubber estates into independent communities against the backdrop of frontier urbanization. Chapter 5 is based on a theoretical framework involving general migration and urbanization theory, the concept of the rural-urban continuum, and the analysis of peri-urban livelihood strategies. A typology of such strategies is presented for the peri-urban dwellers of Riberalta, the principal town in northern Bolivia. Two exclusively urban-based livelihood strategies are distinguished from two strategies which root to varying degrees in rural economic activities. The significance of the rural-urban nexus is underpinned by analyzing the central role of gathering, trading and processing NTFPs in peri-urban livelihood strategies. Chapter 6 seeks to synthesize the main findings from the previous chapters from the perspective of rural-urban links, the distribution of benefits, and the general viability of extractivism in northern Bolivia. Chapter 7 incorporates the conclusions to be drawn for regional development in general and NTFP-based development in particular.

1.3 Point of departure: disciplinary and theoretical pluralism and transparency of values

General methodological approach

Striving for impartial 'objective' research in social and human sciences is necessarily an arduous undertaking. The ways to obtain valid and reliable data through social science research are rather well delineated (e.g., Miller 1991; Atteslander 1995; Von Alemann 1995, Coffey and Atkinson 1996, Denzin and Lincoln 1997). Yet conventional criteria for trustworthiness not only include internal validity, external validity, and reliability, but also objectivity (Lincoln and Guba 1985: 218). To what extent facts and the findings based on them can be considered *objective*, is a matter of fundamental debate among scientists (see Section 0). Moreover, inquiry to be repeatable as claimed in natural sciences can virtually not be fulfilled by empirical social research.[47] Nonetheless, reliability and validity as basic requirements for sound empirical social research go unchallenged (Atteslander 1995: 15). These were sought to be met through a systematic, multidisciplinary, and multitheoretical approach encompassing the following phases:

Village survey: rural settlements (n=163), equivalent to one fourth of an estimated total of 700 settlements, were systematically sampled throughout northern Bolivia.

Rural household survey: the households (n=151), representing about 2% of the region's rural population, were selected at random in 27 rural settlements; the latter were purposefully selected after a stratification of the rural settlements surveyed before.

Neighborhood survey in peripheral neighborhoods (n=4) of Riberalta, the principal town of the northern Bolivian Amazon: one fourth of the town's 16 peripheral neighborhoods was purposefully selected.

Peri-urban household survey in peripheral neighborhoods: the households (n=120), representing around 3% of Riberalta's peripheral population, were selected at random in the four neighborhoods surveyed before.

Historical survey through analysis of historical documents in the National Archive, Sucre.

An additional survey of some 30 itinerant traders engaged in the trade of Brazil nuts or palm hearts was planned but could only be realized to a very limited extent (n=3) due to the high mobility of this group. Analysis of the marketing chain of these products had therefore to rely on secondary sources rather than on own empirical data.[48] Details of the methodology and methods applied in each of the five phases are laid out in the thematic chapters. The main findings from the rural household survey have been incorporated in a chapter (Stoian, in prep.) to be contributed to a forthcoming CIFOR publication (De Jong and Campbell, in prep.). Based on a sustainable livelihoods approach, it includes a typology of rural livelihoods that reflects various trade-offs between extractivism, agriculture, and wage labor. Though it is closely related to Chapter 4 and complementary to Chapter 5, it seemed advantageous to put it

[47] Even if several social inquiries would yield identical data, this would not entail higher trustworthiness. Identical responses to different interviewers not necessarily imply 'truth' but may signal deliberately misleading information through 'reactive response'.

[48] The trade in palm hearts and the related marketing chain, for instance, were studied in depth by an MSc student from Freiburg University, who was supervised by the PhD student (see Hofmann 1997).

aside in order not to inflate the size of this thesis. Wherever deemed necessary it is referred to as Stoian (in prep.).

Data collection did not aim at fulfilling the nearly impossible task of reaching full geographical coverage of the northern Bolivian Amazon. Rather, the study sought to identify the whole array of resource use situations in various geographical settings. All seven provinces of the region were therefore visited in the first phase of the fieldwork, during which about a third of the permanently inhabited rural settlements was surveyed;[49] around half the region's rural population could thus be covered. Departing from this baseline data, a sufficiently broad number of settlements was purposefully selected for the household survey in rural areas. A similar two-step approach, each at a different level of aggregation, was applied for the household survey in peri-urban areas. This ensured a broad and balanced sample which is believed to adequately address "those sample representativity biases that are so common in the site selection and data interpretation of the literature on Amazonian non-timber forest products" (Wunder 1999: 5).

Positivist vs. constructivist/naturalistic philosophy of science

The controversy about the nature of reality, truth, facts, and values

There is a rather broad consensus on approaches that generate valid and reliable data in social sciences, save for the perpetuating debate whether quantitative or qualitative methods are to be preferred. Since in my view the decision on which of these approaches is best to be employed depends ultimately on the researcher's objectives, the guiding research questions, and the research environment – suggesting in many cases a well-founded mix rather than a take-it-or-leave-it approach – this debate shall not be dealt with in greater detail. Suffice it to say here that either approach has found a good number of advocates and, in the course of the time, a sound methodological underpinning. What is of interest in the context of this section is to what extent our personal norms, values, assumptions and judgements shape our general research design, our empirical research, and the inferences thus derived. I shall discuss this issue chiefly in the context of the controversy between the positivist philosophy of science and the constructivist/naturalistic philosophy of social science.[50] The key issues addressed encompass the varying concepts of 'reality', 'truth', and 'facts', and the question to what extent values and valuations[51] have a bearing on them.[52]

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[49] According to DHV (1993e: 3), 461 rural settlements were permanently inhabited in northern Bolivia in 1992.

[50] Most of what is addressed below applies to both natural and social sciences. Likewise, the two philosophies of science under review are not confined to either. Yet I prefer to talk of the positivist philosophy of *science* and the constructivist/naturalistic philosophy of *social science*. A variety of similar antagonistic epistemologies could also be referred to, e.g. rationalism vs. empiricism, monism vs. pluralism, realism vs. irrealism, objectivism vs. subjectivism, scientism vs. mysticism, etc. But the juxtaposition of the positivist and constructivist/naturalistic paradigms proved most fruitful with regard to the issues at stake.

[51] Myrdal prefers the term 'valuations' to 'values', since the latter 1) invites confusion as to the whole setting of valuations, 2) often contains a hidden value premise, and 3) is often associated with something solid, homogenous, and fairly stable in spite of its regularly contradictory and unstable nature (1973: 33). Nonetheless, because of its common use in literature, the term 'values' will be retained along with 'valuations' throughout the text.

[52] This Section strongly benefited from Yvonna Lincoln's and Egon Guba's "Naturalistic Inquiry" (1985), as well as Luca Tacconi's (1996) excellent review article "Dissent from Choice Theory: Implications for Environmental Decision Making".

"Is being value-free valuable?" This compelling question is raised by Lincoln and Guba (1985: 160), prominent representatives of the so-called naturalistic inquiry.[53] To answer the question, I shall recall their definition of values as being "*arbiters of preference or choice*. That is to say, a value is simply the criterion, or touchstone, or perspective that one brings into play, implicitly, or explicitly, in making choices or designating preferences. In this sense values would encompass all of the following:

assumptions or axioms, as for example, the assumptions or axioms (T_1, basic beliefs) undergirding the conventional and naturalistic paradigms of inquiry, or any other conceptual system;

theories or hypotheses, that is, any constructions that may be developed to describe or explain some phenomenon, and any logical (T_3) derivatives therefrom;

perspectives, as, for example, the perspective that any particular discipline affords on some phenomenon of interest; ...

social/cultural norms, that is, the variety of regulators of thoughts, feelings, and actions that are imposed by society or cultural group on its members; and

personal or individual norms, that is, the variety of regulators imposed by the individual on him- or herself that may reflect or differ from the social/cultural norms, or may go beyond them" (ibid.: 160-1)

The various ramifications of the term 'values' are in continuous interaction so that it is not possible to sort out their individual influences in any actual situation (ibid.: 161). Since the positivist or conventional paradigm requires inquiry to be value-free, approaches based on it should be free from any of the above categories. Ironically, this requirement is itself a value claim that bears investigation (ibid.: 161). Another claim of positivist philosophy is that 'ascertainable facts' in (social) science research should be dissociated from ethics because of its 'valuations and obligations' (Robbins 1984: 91ff). On the other hand, social scientists increasingly agree that valuations do play a critical role in research. Myrdal (1973: 147), for instance, argues that "it is true that, in principal, all scientific work has to be based on value premises. There is no view without a viewpoint, no answers except to questions. In the viewpoint applied and the questions raised, valuations are involved." And he continues, "valuations are, in fact, determining our work even if we manage to be unaware of it. And this is true, however much the researcher is subjectively convinced that he is simply observing, recording and analyzing facts" (ibid.).

Against the backdrop of mounting criticism towards positivist assumptions of 'objective' and value-neutral research, the constructivist/naturalistic approach is increasingly attested to the fact that inquiry cannot be value free, in particular as far as social and behavioral sciences are concerned (see e.g., Kelman 1968, Bahm 1971, Myrdal 1973, Homans 1978, Hesse 1980, Krathwohl 1980, Lincoln and Guba 1985, Arbib and Hesse 1986, Proctor 1991, Tacconi

[53] Lincoln and Guba (1985: 7) point out that the term 'naturalistic' emerged largely through a historical accident. Other aliases of this alternative paradigm of inquiry are postpositivistic, ethnographic, phenomenological, subjective, case study, qualitative, hermeneutic, humanistic (ibid.). Salient features of 'naturalism' or 'naturalistic investigation' are that, first, no manipulation of the antecedent conditions of the behavior studied is implied on the part of the inquirer, and that, second, he or she does not impose *a priori* units on the outcome (ibid.: 8). The authors pursue a constructed reality position and, consequently, the underpinning of their "naturalistic inquiry" has much in common with the constructivist paradigm. The authors dedicate a whole chapter to 'constructed realities' (ibid.: 70-91), and they argue that "inquiry ... yields constructions that also have value dimensions, and such constructions are useful even if they are not absolute" (ibid.: 184). In the context of this study, I shall therefore refer to the *constructivist/naturalistic* philosophy of social science as a singular, if symbiotic, paradigm.

1996, Schwandt 1997). This view is confirmed upon scrutiny of the above list of values, indicating that science is inevitably value-bound, be it with respect to axioms, theories, and perspectives, or regarding social, cultural and individual norms. I therefore share the view that value-free research – at least as to social sciences – is a myth.[54] As Hesse (1980: 247) puts it, "the attempt to produce value-neutral social science is increasingly being abandoned as at best unrealizable, and at worst self-deceptive, and is being replaced by social sciences based on explicit ideologies, or at least on explicit points of view related to particular interests in society."[55] This, however, should not be misinterpreted as an invitation to overtly biased research. On the contrary, realizing that social sciences are inescapably value-laden calls upon the researcher to address the issue of bias, to curb it wherever possible, and to be transparent about his or her value premises, as will be discussed below.

The controversy between positivists and constructivists/naturalists or, say, between monists and pluralists, is fundamentally, albeit not exclusively, one between the natural and social sciences. This is pointed out by Goodman (1978: 4-5):

> "The pluralist, far from being anti-scientific, accepts the sciences at full value. His typical adversary is the monopolistic materialist or physicalist who maintains that one system, physics, is preeminent and all-inclusive, such that every other version must eventually be reduced to it or rejected as false or meaningless. ... The pluralists' acceptance of versions other than physics implies no relaxation of rigor but a recognition that standards different from yet no less exacting than those applied in science are appropriate for appraising what is conveyed in perceptual or pictorial or literacy versions."

The multiplicity of competing theories and versions in social sciences is somewhat ambivalent. On the one hand, "advance in all sciences proceeds through controversy. But in the natural sciences such warfare has a definite outcome. Theories are refuted, hypotheses become obsolete, the frontiers of knowledge are pushed forward. ... In economics, on the contrary, all doctrines persist" (Myrdal 1973: 151-2). Without doing harm to Myrdal's statement we can extend it from economics to all the social sciences.[56] Multiple theories, as we will see below, not only indicate rivalry among stubborn dogmatists but point to the existence of multiple realities. This is in sharp contrast to the positivist philosophy of science, which essentially differs from the constructivist/naturalistic philosophy of social science as to the concept of 'reality', 'truth', and 'facts' and the role of values therein (Table 1-1).

[54] For example, the conclusions of Proctor's "Value-free Science?" commence with the caption "Neutrality as myth, mask, shield, and sword" (1991: 262-71), a largely self-explanatory title.

[55] According to Hesse (1980: 191), the 'value-ladenness' of the social sciences is analogous to the 'theory-ladenness' in natural science.

[56] Myrdal, an economist, believes that our problems are so basically similar in all the social sciences that his conclusions can be generalized and illustrated from other fields of social research as well (1973: 156).

Table 1-1 Main differences between the positivist philosophy of science and the constructivist/naturalistic philosophy of social science.

Positivist paradigm	Constructivist/Naturalistic paradigm
there is a 'real' reality and an 'apparent' reality; the first is based on facts, the latter on values	the existence of a 'real' reality is doubted, even in 'hard' sciences but certainly in social sciences
there is a single, tangible reality	there are multiple, constructed realities
'facts' exist independent of a theory and they can be determined in a value-free manner by applying an appropriate inquiry methodology	'facts' are theory-laden; theories in turn are constructed and since they rest on axioms and assumptions, 'facts' are value-determined independent of the methodology applied
basically there is one 'royal' method for any specific component of an inquiry	a variety of methods may be useful, as there is no royal road to truth
all facts are accessible, provided the right method is applied	there are always large areas of knowledge that are inaccessible to any approach
knowledge is protected by abstracting from all perspectives (the claim of objectivity)	knowledge is protected by balancing multiple perspectives to constrain bias (the claim of fairness)
coherence in an inquiry indicates both value-freedom and truth	coherence in an inquiry indicates stability, independent of its erroneous or true content
the study object, the methods to apply, and the analytical framework can be chosen in an 'objective' way	values are determinative of decisions about what to study, how to study it, and what interpretations to make; objectivity is an illusion
inquiry seeks predictability and control in all situations at all times (via strong knowledge claims)	inquiry seeks to understand and manage indeterminacy and openness in context-dependent situations (via weak knowledge claims)

Source: Adapted from Lincoln and Guba (1985: 162-173).

The paradigms of positivist and constructivist/naturalistic inquiry are highly antagonistic (Table 1-1). One of the major differences is their interpretation of 'reality'. Positivists would assert either an 'objective reality' ('real' reality) or a 'perceived reality' ('apparent' reality).[57] The former is based on the believe that reality at some point will be known to all, while the latter roots in the believe that no one person, or group of persons, can know all of reality at any point in time (Lincoln and Guba 1985: 82-3). In contrast, constructivists or naturalists subscribe to either a 'constructed reality' or a 'created reality'. 'Constructed realities' ought to

[57] This distinction is closely akin to Popper's division between 'depth reality' and 'surface reality' (cf. 1972: 37). Popper was a strict opponent of what he calls 'idealism' or 'subjectivism' (cf. Popper 1972: 39-43), under which he would probably subsume constructivism, albeit he made no explicit reference to it, save for some remarks on mathematical constructivism (ibid.: 134ff) which is entirely different. Though brilliant in many respects, Popper missed the point when holding that when there is no 'real' reality, only dreams and illusions remain (cf. ibid.: 42). The issue at stake is that, from a constructivist viewpoint, there are multiple 'constructed' realities – far from being 'dreams' or 'illusions' – rather than a single 'objective' reality.

match the tangible entities as closely as possible; this is not to create a reconstructed single reality (or fulfill the criterion of objectivity) but rather to represent the multiple constructions of individuals (or fulfill the criterion of fairness) (ibid.: 84). 'Created realities', on the other hand, root in the presumption that there is no reality at all and, hence, that reality cannot be 'observed' but is 'realized' or 'created' (ibid.: 85-7).[58]

Having apprehended the fundamental differences as to the interpretation of 'reality', it does not come as a surprise that there is also a controversy about 'truth' or 'objective knowledge'[59], its rational foundation and implications. "Modern philosophy of science arose from the Vienna Circle and its attempt to reconstruct the rational components of science" (Feyerabend 1981: 80). Affiliates of the Vienna Circle introduced the principle of verification into the debate on empirical knowledge (Störig 1981: 671). Statements on the 'reality' were required to be verifiable so as to be considered meaningful or 'true'. It soon became apparent that the principle of verification was theoretically desirable but non-operational. Karl Popper showed a way out by proposing a more modest and, after all, feasible principle, viz. falsification. Now, a theory was considered the more trustworthy the longer it could not be falsified. The search for truth should be done by way of bold conjectures and the critical search for what is false in our various competing theories (Popper 1972: 319). In other words, a scientist ought to put forward explanations in order to generate theories that should be testable, as all laws or theories must be regarded as hypothetical or conjectural, that is as guesses (ibid.: 9, 356).

Popper was convinced that we can never justify empirically the claim that a scientific theory is true, and that we are therefore bound to prefer, tentatively, some guesses or theories to others (ibid.: 13). All theories and even all appraisals of theories are considered conjectural (ibid.: 58). He therefore suggests to scrutinize competing theories by means of a 'critical method', that is "a method of trial and the elimination of errors, of proposing theories and submitting them to the severest tests we can design" (ibid.: 16). Theories proven false need to be refuted, independent of the fact that "there is no assurance that we shall be able to make progress towards better theories" once we have dismissed a falsified theory (ibid.: 17). "It is through the falsification of our suppositions that we actually get in touch with 'reality' (ibid.: 360). But absolute certainty cannot be attained by scientists; their challenge is to discover better and better theories that must be falsifiable in order to progress science (ibid.: 361).[60] Popper's idea of falsification was advanced by Carnap, who established general rules for scrutiny and verifiability of statements and theories according to their probability (Störig 1981: 673).

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[58] The concept of a 'created reality' received a strong impetus from quantum mechanics (Lincoln and Guba 1985: 85). The fact that we can know either the momentum of a particle or its position, but not both, serves as an illustration of the phenomenon that it is the scientist himself who 'creates' certain properties, or a reality, by choosing what to determine (cf. Zukav 1979: 29). The difference between 'constructed realities' and 'created realities' is that the former is *constructed* by actors, while the latter is *created* by participants (Lincoln and Guba 1985: 87). In social psychology and economics, 'created realism' finds an equivalent in the concept of 'self-fulfilling prophecies' (cf. Jones 1977, Farmer 1999).

[59] According to Popper (1972: 73), 'objective knowledge' "consists of the logical content of our theories, conjectures, guesses (and, if we like, of the logical content of our genetic code)." As such, it differs from 'subjective knowledge' in that the latter is an organismic knowledge, since it consists of the dispositions of organisms (ibid.). For an impressive, if cynical, review of Popper's opus "Objective knowledge", see Feyerabend (1981: 168ff).

[60] Popper created the term 'verisimilitude' (truthlikeliness) for this approximation to truth (see Popper 1972: 52). The underlying concept was criticized, among others, by Hesse (1980: 217) because "in examining the sequence of theories even in empirical science we cannot find any rules that would justify us in supposing that the propositional expressions of theories are asymptotically approaching the truth."

Applying the aforementioned four-part typology of 'reality' to Popper proves a tricky endeavor. Far from classifying himself a positivist[61], Popper shared the positivist distinction between a 'real' reality and an 'apparent' reality, thus denying multiple, 'constructed', or, as he would call it, 'subjective' realities.[62] In a way he seeks to avoid clarification of a clearer stance toward reality[63] by resorting to a philosophical discourse on certainty and, what he deems far more important, the growth and progress of knowledge. In his view, absolute certainty is unattainable and, consequently, "the quest for certainty, for a secure base of knowledge, has to be abandoned" (Popper 1972: 37). In this sense, Popper is clearly antipositivistic. Similarly, though adhering to realism and common sense, Popper was not of the opinion that we have a very direct, immediate, and secure perception of external, objective reality; instead, as he emphasizes, we have to *learn* that we have a self and we have to learn about our own and others' bodies: "it is all decoding, or interpretation" (ibid.: 36). Though Popper was clearly opposed to idealism or subjectivism – of which he fails to provide an unambiguous definition – these passages are somewhat akin to the constructivist/naturalistic paradigm, which holds that there will always be areas of knowledge that are inaccessible to inquiry and, moreover, that it is our own interpretations that 'construct' reality.

The controversy on the nature of 'truth' continues. The vast majority of scholars, independent from their epistemological backgrounds, would probably agree with Popper's claim that "our main concern in philosophy and science should be the search for truth" (1972: 44). But what kind of 'truth' are we talking about? Is there a unique truth to be ascertained by 'objective' facts, as the positivist paradigm holds? Or do we face "trouble with truth", as Goodman (1978: 17), a scholar with "skeptical, analytic, constructionalist orientation" (ibid.: 1),

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[61] His dislike of positivism, phenomenalism, and also phenomenology roots in their being "infected by the subjectivism of the Cartesian starting-point" (Popper 1972: 38). Popper confesses that he is "thoroughly opposed to idealism, positivism, or even neutralism in philosophy" (1972: 323).

[62] Feyerabend, though, labels Popper an ontological pluralist (1981: 168), based on the latter stating that "there are many sorts of reality which are quite different ..." (Popper 1972: 37). However, rather than arguing in favor of multiple realities, Popper refers here to the various manifestations of the 'apparent' reality. He holds, for example, "if there was not a real world, as rich and even much richer than the world we know superficially from our daily life, and if the study of this world was not the main task of philosophy, then I would not be interested in philosophy" (ibid.: 323). Elsewhere Popper suggests the existence of three worlds, viz. the world of physical objects or physical states (world 1), the world of states of consciousness, or of mental states (world 2), and the world of *objective contents of thought*, especially of scientific and poetic thoughts and of works of art (world 3) (ibid.: 106). But, as Feyerabend shows, neither world 2 nor world 3 can be conceded an existence autonomous of world 1, since Popper fails to provide the argument for such autonomy (cf. Feyerabend 1981: 191). So the would-be pluralist turns again into a monist. It would go beyond the scope of this study to scrutinize in how far Christian philosophy of life had a bearing on scholars like Popper who principally adhere to the positivist principle of a 'real' reality hidden behind the curtain of the 'apparent' reality experienced and sensed in our everyday life. I also admit that the whole – purportedly merely scientific – discussion about 'reality' and 'truth' as represented here is highly eurocentric. There is no doubt that, for example, Chinese philosophy would considerably enrich such a debate and contribute to reconcile at least some of the antagonistic presumptions of positivist and constructivist/naturalistic philosophy of science.

[63] Both 'reality' and 'truth' are terms Popper seems to be at unease with. He proposes to replace the term 'reality' by 'the set of real facts' (Popper 1972: 329) and to discard the question 'What is truth?' (ibid.: 309). This for two reasons: first, because of his 'anti-essentialist' stance – he asserts the reality of *problems*, *theories*, *mistakes*, etc. but rejects the reality of *concepts* (ibid.: 323). Second, he dislikes discussing the meaning of words (ibid.: 309). In this respect, he is in clear opposition to contemporary philosophers, in particular to Ludwig Wittgenstein, who "takes language to be the mark of human sociality: Hence human forms of life are defined by the fact that they are forms created by and for those who are in possession of language" (Das 1998: 180). Feyerabend (1981: 111) is even inclined to say that Wittgenstein's theory of language can be understood as a constructivist theory of meaning. As to the importance of language in the philosophy of science, Myrdal (1973: 159) puts it far simpler by stating that "terminology, and the meaning given to terms, do matter."

formulates? Based on the commonsense theory, which was defended and refined by Tarski (1956), Popper argued that a theory or statement is true if and only if it corresponds to the facts (Popper 1972: 44-6). In contrast, Goodman stresses that it is the *frame of reference* that determines whether a statement or theory is false or true (Goodman 1978: 2). This translates into the seemingly banal recognition that what may be right in a particular frame of reference may be wrong in another. Or, from an individual perspective, what may be right from one person's point of view may be wrong from another's. Goodman (1978: 18) therefore concludes that "truth, far from being a solemn and severe master, is a docile and obedient servant. The scientist who supposes that he is single-mindedly dedicated to the search for truth deceives himself. He is unconcerned with the trivial truth he could grind out endlessly; and he looks to the multifaceted and irregular results of observations for little more than suggestions of overall structures and significant generalizations. He seeks system, simplicity, scope; and when satisfied on these scores he tailors truth to fit."[64]

Having elaborated on 'reality' and 'truth', we shall turn to the closely related concept of 'facts'. "For 'tough-minded' philosophers, observation is just opening one's eyes and looking. Facts are simply things that happen; hard, sheer, plain and unvarnished" (Hanson 1958: 31). The question is whether facts indeed are 'ascertainable' or 'objective', as positivist philosophy of science holds, or whether they are 'fabricated', as constructivists argue.[65] Goodman, for instance, views positivists as

> "fundamentalists who know very well that facts are found not made, that facts constitute the one and only real world, and that knowledge consists of believing the facts. These articles of faith so firmly possess most of us, they so bind and blind us, that 'fabrication of fact' has a paradoxical sound. 'Fabrication' has become a synonym for 'falsehood' or 'fiction' as contrasted with 'truth' or 'fact'. Of course we must distinguish falsehood and fiction from truth and fact; but we cannot, I am sure, do it on the ground that fiction is fabricated and fact found" (1978: 91).

We have seen earlier that constructivist/naturalistic approaches hold that facts – at least in social sciences – cannot exist independent from a theory (e.g., Hanson 1958, Myrdal 1973: 148, Hesse 1980: 187, Arbib and Hesse 1986: 8).[66] Consequently, facts cannot be 'objective' but it is the (social) scientists who clearly shape them through their own premises, judgements, and statements: "That we find what we are prepared to find (what we look for or what forcefully affronts our expectations), and that we are likely to be blind to what neither helps nor hinders our pursuits, are commonplaces of everyday life and amply attested in the psychological laboratory" (Goodman 1978: 14).

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[64] Goodman distinguishes two types of truth: "In a scientific treatise, *literal truth* counts most; but in a poem or novel, *metaphorical or allegorical truth* may matter more, for even a literally false statement may be metaphorically true" (1978: 18; emphasis added).

[65] It is Goodman who speaks of the "fabrication of facts" (1978: 91). Implicitly, he can be labeled a constructivist, though explicitly he describes his stance as that of "*radical relativism* under rigorous restraints" (ibid.: x; emphasis added). Such restraints are described as follows: "Willingness to accept countless alternative true or right world-versions does not mean that everything goes, that tall stories are as good as short ones, that truths are no longer distinguished from falsehoods, but only that truth must be otherwise conceived than as correspondence with a ready-made world. ... The multiple worlds I countenance are just the actual worlds made by and answering to true or right versions. Worlds possible or impossible supposedly answering to false versions have no place in my philosophy" (ibid.: 94).

[66] Hanson, for instance, holds that facts are as theory-laden as we hope our theories are fact-laden; in other words, facts are small theories, and true theories are big facts (1958: 19, 31ff). Myrdal reiterates the linkage between facts and theories and their dependence on valuations by stating that "as a matter of fact, valuations enter into research from the start to the finish: determining the approach, the definition of the concepts used and thus the facts observed, the way of drawing inferences, and even the manner of presenting the conclusions reached (1973: 148).

Accepting that 'facts' are shaped by the inquirer's theories, it is obvious that inquiry reflects the researcher's truth rather than a unique truth. Striving for objective, detached analysis thus bears two major shortcomings. "First, research that attempts to present one objective reality actually presents the researcher's reality. The various stakeholders' realities are omitted. Second, when the research process considers policy issues, detached analysis may result in irrelevant analysis and/or policy inaction" (Tacconi 1996: 336-7). Heron (1981: 33) argues on a similar line:

> "the 'truths' researchers generate are a function of the researchers' procedural norms and underlying values. And if these 'truths' purport to be about persons other than the researchers then they have indeterminate validity, no secure status as truths, until we know whether those other persons assent to and regard as their own the norms and values of the researchers. ... the idea that science can be value free is ... a delusion."

Implicitly even Popper, though overtly opposed to multiple 'realities' and 'truths', acknowledged the relativity of our theories and statements when affirming that "the idea of truth is absolutist, but no claim can be made for absolute certainty: *we are seekers for truth but we are not its possessors*" (1972: 46-7).

Deconstructing the myth of unique truth seems to leave us with nothing at hand. What then is the firm ground we can base our statements and theories on? "With false hope of a firm foundation gone, with the world displaced by worlds that are but versions, with substance dissolved into function, and with the given acknowledged as taken, we face the questions how worlds are made, tested, and known" (Goodman 1978: 7). The various 'ways of worldmaking', that is creating own versions and visions of the world, are Goodman's central theme: processes that go into worldmaking are, though far from being comprehensive, composition and decomposition, weighting, ordering, deletion and supplementation, and deformation (ibid.: 7-17). What is thus made or 'constructed' individually or collectively still appears to most as the only 'true' version of the world:

> "This world, indeed, is the one most often taken as real; for reality in a world, like realism in a picture, is largely a matter of habit. Ironically, then, our passion for *one* world is satisfied, at different times and for different purposes, in *many* different ways. Not only motion, derivation, weighting, order, but even reality is relative. That right versions and actual worlds are many does not obliterate the distinction between right and wrong versions, does not recognize merely possible worlds answering to wrong versions, and does not imply that all right alternatives are equally good for every or indeed for any purpose" (Goodman 1978: 20-1).

At this point, Goodman merges with Popper, as both are concerned with the growth of knowledge, even though they differ in their opinion on the ways such growth can be confirmed. Popper, departing from realism paired with what he calls 'enlightened' common sense (Popper 1972: 37-44), viewed theories that withstand falsification as means to advance knowledge.[67] Goodman holds that "such growth in knowledge is not by formation or fixation of belief but by the advancement of understanding" (Goodman 1978: 22). Whereas Popper was convinced that facts are merely to be found, Goodman replies that facts and entire worlds are as much found as *made* (cf. Goodman 1978: 22). And he continues, "knowing is as much remaking as reporting. All the processes of worldmaking I have discussed enter into knowing. Perceiving motion ... often consists in producing it. Discovering laws involves drafting them.

[67] Popper, though, was heavily criticized by Feyerabend for not trying to reestablish contact with the practice of science but merely trying to free the suggested 'reconstructions' of what has already been known from internal difficulties. "Thus Popper's theory of falsification concerns an improvement of *confirmation logic*, not of science. The same is true of his theory of verisimilitude" (Feyerabend 1981: 85).

Recognizing patterns is very much a matter of inventing and imposing them. Comprehension and creation go on together" (ibid.: 22). Yet there is another point where Popper and Goodman merge, namely with respect to the approximation to 'certainty' or 'truth'. Goodman argues, "whether we say that ... a law is an approximation to truth or a true approximation matters very little. What does matter is that the approximations are preferred to what may be regarded either as truths or as more exact truths" (ibid.: 121). This is closely akin to the way Popper views the approximation to certainty and the preference of theories with the better entrenched and hence less falsifiable predicates.

Having amply theorized about contrasting views of reality, truth, facts, and values, my conclusion to employ constructivist/naturalistic philosophy of social science as epistemological underpinning of this study shall be illustrated by an example related to the study's topic. It is drawn from the Peruvian Amazon where, during the rubber boom in the early 20th century, the native population was heavily decimated through an unprecedented outbreak of terror and violence imposed by colonial pressure.[68] Interpretation as to the antecedents of the occurrences posed severe difficulties for politics and science alike. Obviously, there was no such thing as a single reality, a unique truth, and 'objective' facts that could have been grasped to understand the inconceivable. As Taussig puts it:

> "Meaning was elusive. Doubt played havoc with certainty. Perspectives were as varied as they were destructive of one another. The real was fictional and the fictional was real ... In such a world of control, clarity itself was deceptive, and attempts to explain the terror could barely be distinguished from the stories contained in those explanations—as if terror provided only inexplicable explanations of itself and thrived by doing so" (1987: 127-8).

The example of the Putumayo atrocities is an especially enlightening one when contemplating about the existence of a single 'objective' reality as opposed to multiple 'constructed' realities. Let us take Hardenburg, a young "engineer" and adventurer from the US, and his version of the killing and slaughter in the Putumayo region as a point of departure. In his report (Hardenburg 1912), he basically confirmed the rumors of the massacres among the Putumayo's native population. Upon enquiry by the British Parliamentary Select Committee on Putumayo, he admitted that he had not seen anything of actual crimes being committed but that it was "general knowledge" that the crimes were occurring. It could be argued that the lack of evidence or 'ascertainable facts' would immediately disqualify such a statement. But Taussig argues that it is precisely "this general knowledge in the shape of mystic narratives which acts as screen and as a network of signifiers without which 'the facts' would not exist"

[68] The killing, torture, and sorcery of Indians on the Putumayo rubber estates owned by the Peruvian Amazon Rubber Company was to become the infamous climax of atrocities against the Amazon's native population. It would cost around 30,000 lives, killed on behalf of a company that had its seat in London but was of Peruvian origin (Pennano 1981: 10-1), with the Indian population on the Putumayo being effectively reduced from around 50,000 to no more than 7,000 (Price 1954: 197). The crimes were committed by estate managers and employees as well as their mostly Indian guards, 'ethnic soldiers' known as the *muchachos*, who were used to control 'savages' other than those to whom they were kin (Taussig 1984: 477, 493). This gang comprised 500 natives from Barbados (*barbadenses*), who were remunerated according to the rubber they forwarded from those they supervised (Pennano 1981: 11). Given this incentive, violence, massacre, and servitude became ever more pronounced, and rumor on these atrocities got as far as London. Consequently, Sir Roger Casement, the British Consul in Rio de Janeiro, was commissioned by the British Foreign Office to undertake a several-month travel to the Amazon in 1910. His paths had crossed with Joseph Conrad in the Congo in 1890, from where Casement returned with his Congo report while Conrad (1962) was inspired to his novella "Heart of Darkness", in which he laid down his impressions of the terror of the rubber boom in the Congo (Taussig 1984: 471-3). In his report to the House of Commons, Casement largely confirmed the alleged occurrences on the Putumayo (cf. Casement 1912, 1913, Hardenburg 1912, Pennano 1981, Taussig 1984, 1987).

(1984: 490). He then goes as far as associating the actual occurrence of terror and death with the imaginative power of fact-like narratives:

> "The importance of this fabulous work extends beyond the epic and grotesque quality of its content. The truly crucial feature lies in creating an uncertain reality out of fiction, a nightmarish reality in which the unstable interplay of truth and illusion becomes a social force of horrendous and phantasmic dimensions. To an important extent all societies live by fictions taken as reality. What distinguishes cultures of terror is that the epistemological, ontological, and otherwise purely philosophical problem of reality-and-illusion, certainty-and-doubt, becomes infinitely more than a 'merely' philosophical problem. It becomes a high-powered tool for domination and a principal medium of political practice. And in the Putumayo rubber boom this medium of epistemic and ontological murk was most keenly figured and objectified as the space of death" (Taussig 1984: 492).

The Putumayo example illustrates two things. First, it points at the importance of 'constructed' and, in particular, 'created' realities in the sense of the constructivist/naturalistic paradigm. Second, it shows that the strive for value-free elaboration of a single reality is idealistic at best, and probably obscuring 'reality' more than unveiling it by pretending its uniqueness. One may argue that the narration that mediated the culture of terror (Taussig 1984: 494) was far from being scientific and, hence, epistemological conclusions could not be drawn from the Putumayo example. But the point at stake is that – irrespective of their scientific 'proof' – the statements, images, and visions of Indians that were circulating among those who committed the crimes against the native population did unfold a destructive power and thus 'created' realities, or 'made' worlds. This illustrates that it is virtually impossible to disentangle 'fact' from fiction, or imagination from 'truth', especially in cases where fiction turns into fact and imagination becomes truth in the sense of self-fulfilling prophecies. Curiously, Popper argued on a similar line when stating that "we have all our philosophies, whether or not we are aware of this fact, and our philosophies are not worth very much. But the impact of our philosophies upon our actions and our lives is often devastating" (1972: 33). Such an objective-subjective dilemma was faced by Taussig when seeking to unravel the Putumayo 'truth':

> In part my concern stemmed from my problems in evaluating and interpreting the 'facts' constituted in the various accounts of the Putumayo atrocities. This problem of interpretation grew ever larger, eventually bursting into the realization that the problem is precisely what is central to the culture of terror—not only making effective talking and writing against terror extremely difficult, but, even more to the point, making the terrible reality of the death squads, disappearances, and torture all the more effectively crippling of people's capacity to resist.
>
> While much attention is given to 'ideology' in the social sciences, virtually none as far as I know is given to the fact that people delineate their world, including its large as well as its micro-scale politics, in stories and story-like creations and very rarely, if ever, in ideologies (as customarily defined). Surely it is in the coils of rumor, gossip, story, and chit-chat where ideology and ideas become emotionally powerful and enter into active social circulation and meaningful existence. So it was with the Putumayo terror, from the accounts of which it seems clear that the colonists and rubber company employees not only feared but also themselves created through narration fearful and confusing images of savagery—images which bound colonial society together through the epistemic murk of the space of death. The systems of torture they devised to secure rubber mirrored the horror of the savagery they so feared, condemned—and fictionalized" (Taussig 1984: 494).

Examples to illustrate the *problématique* of a single reality need not be as stunning as that of the Putumayo atrocities.[69] As we have seen earlier, the concept of a single, tangible reality

[69] For a recent example, likewise related to rubber tapping in Amazonia, see Keck (1995) and Edelman (1988). The rubber tappers movement in Acre is presented as a "fascinating example of the social *construction* of an issue and shows the relationship between strategic acts of image making, alliance building, and the seizing of institutional opportunities" (Keck 1995: 409; emphasis added). Keck argues that the stories become powerful metaphors through which activists can hope to influence policy; as historical events are transformed into

and a single, impartial truth attracted mounting criticism. "The movement is from unique truth and a world fixed and found to diversity of right and even conflicting versions of worlds in their making" (Goodman 1978: x). Given the multiplicity of theories, each of which may be valid in a different world, how can our knowledge be advanced by falsifying theories?

Nelson Goodman (1954, 1978) would shake the philosophical construct of Popper, Carnap, and their followers by doubting that there is an unambiguous criterion for determining which statements or theories can be considered 'laws' in the sense of a natural law (Störig 1981: 673). He argues that "the truth of laws of a theory is but one special feature and is often, as we have seen, overridden in importance by the cogency and compactness and comprehensiveness, the informativeness and organizing power of the whole system" (Goodman 1978: 19). And he continues, "truth cannot be defined or tested by agreement with 'the world'; for not only do truths differ for different worlds but the nature of agreement between a version and a world apart from it is notoriously nebulous" (ibid.: 17). Indeed, such an argumentation is a strong strike against the stronghold of critical rationalism, viz. the falsification paradigm and the attempts to render it operational by determining the degree of likelihood of given theories.

Nonetheless Goodman does not knock out the bottom of Popper's concept of falsification. Rather, he modifies it by pointing to the importance of multiple frames of reference and, consequently, the existence of multiple worlds or realities. He argues that "a version is taken to be true when it offends no unyielding beliefs and none of its own precepts. Among beliefs unyielding at a given time may be long-lived reflections of laws of logic, short-lived reflections of recent observations, and other convictions and prejudices ingrained with varying degrees of firmness. Among precepts, for example, may be choices among alternative frames of reference, weightings, and derivational bases. But the line between beliefs and precepts is neither sharp nor stable. Beliefs are framed in concepts informed by precepts" (Goodman 1978: 17).

This section can be summarized by concluding that 1) there are multiple constructed, if not created, realities rather than a single, tangible reality; 2) since there is no unique truth, competing theories may be equally true, although only in a given frame of reference; 3) facts are not 'objective' but depend on theories; and 4) research implies values, as it involves axioms, theories, perspectives, and social, cultural and individual norms, all of which are value-laden. We may therefore conclude along with Proctor (1991: 271): "Science is the product of society and must remain accountable to that society. It is the duty of science, in the face of its public, to understand the conditions of its freedom, but also the responsibilities brought forth by that freedom."

A call for the transparency of values

As this study largely follows the critics of positivist philosophy of science, it is based on the conviction that neither in theoretical analyses nor in applied studies it is possible to carry out

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allegorical narrative, the meanings attached to these events stem as much from the contents in which they are invoked as from the contexts in which they took place (ibid.: 410). The story became powerful because it created an identity, and not merely a linkage, between a particular, localized struggle for social justice and global environmental goals (ibid.). The social construction underlying this identity involved those who told the story and those who listened, all of whom wanted the identity, though not necessarily for the same reasons (Edelman 1988: 32-5).

any analysis without making value judgements (cf. Tacconi 1996: 331).[70] However, "what economists and also other social scientists have commonly done is to conceal the valuations that underlie their analytical structures—and, indeed, the very terminology they use—so deeply that they can happily remain unaware of them in their researches and trust that the latter are merely factual. Very generally, social scientists are unsophisticated 'positivists'" (Myrdal 1973: 149). Economists and their colleagues from social sciences are therefore called upon to deal with or speculate about the problem of values without pontificating on ultimate ends (Tisdell 1983: 42). That science is inevitably value-bound may be indigestible for scholars accustomed to the tenets of 'hard' science; the more it is imperative that their meaning and implication be sorted out. "Once aware of the value implications that inhere his or her work, the inquirer is under *moral compulsion* to take account of those values. Objectivity cannot be permitted to become a veil that obscures the need for balance" (Lincoln and Guba 1985: 173). By referring to moral compulsions, we touch upon the relationship between science and ethics. Many economists would probably plead for separating the two, even as to the issue of natural resource management. Others hold that "questions about ethics are important because all prescriptions about what society *ought* to do in managing the environment and natural resources are ultimately based on normative considerations and therefore involve value judgements" (Tisdell 1991: 7).

Accepting the existence of values or valuations and their inevitable bearing on social sciences does not mean to tolerate bias in inquiry. Similarly, the recognition of multiple alternative world-versions betokens no policy of *laissez-faire*; for this reason, standards distinguishing right from wrong versions become even more important (Goodman 1978: 107). But what are the ways to curb bias in social science research? "The means to do this are, first, to be aware of the ubiquitous danger and, second, to avail ourselves of the means that logic places at our disposal, that is, to use the technique of explicit value premises. The fact that this is needed in social research automatically delineates the gulf between our research and the simpler research of natural scientists" (Myrdal 1973: 157). Specifically, "in order to avoid biases in research and to make it 'objective' in the only sense this term can have in the social sciences, we need to select and make explicit specific value premises, tested for their feasibility, logical consistency, relevance, and significance in the society we are studying" (Myrdal 1973: 147). Tacconi (1996: 331) argues on a similar line, "the analysts should state as clearly as possible the values that guide their specific analyses". More broadly, we should call for transparency of our philosophies – including norms, values, likes and dislikes – as these undoubtedly have a bearing on our research, be it as to the choice of the study object, the guiding research questions, and, above all, the interpretation of the data collected.

As the Putumayo example shows, we need to be conscious not only of our value premises but also of the political nature of our studies: "Although scientific methods can and should be purged of human biases, the choice of what to study is ultimately a political one. The gulf between scientific research and reality in Amazonia today will be bridged only when scientists realize the political nature of their choice" (Allegretti 1990: 263). Wittingly or not, the outcome of our research may constitute part of a new world that, for the good or for the

[70] However, I do not share the more rigid view of Neo-Marxists like Harvey who maintain that "rigorous science can never be neutral in human affairs; attempts to put oneself outside of history at best produce rigorous and well-meaning pseudosciences, of which positivism is surely the best example" (1985: x). Curiously, what Harvey here refers to as "pseudoscience" would not fail to assemble sufficient representatives of non-Marxist background who might be as fast in returning this label to a number of Marxist and Neo-Marxist works.

worse, is likely to create yet other worlds. And while a single study contributes little, if anything, it is the conjunction of such studies that finally make a world.

Own values, paradigms, and root assumptions

The previous section furnished the basis for the need to render explicitly our value premises and basic beliefs or root assumptions. Before doing so, it is necessary to address a common misconception, viz. that values in science imply bias. "By working with specific and explicit value premises, we are not simply 'expressing our own biases', as sometimes has been suggested. For a characteristic of biases is ... that the researcher is not conscious of them and does not have them under control" (Myrdal 1973: 55). Thus, bias does not result from value premises but, on the contrary, can only be avoided if these are laid bare.[71]

Rendering explicit my value premises is believed to permit a more fruitful discussion on the outcome of this study. I wish to encourage the readers, especially those of diverging epistemological, theoretical, and normative backgrounds, to properly assess my personal way of construing the underlying causes of the phenomena in question, and to draw different conclusions wherever deemed necessary. To this end, I shall first share some more general theoretical considerations with the reader – the specific theoretical frameworks are found in the respective thematic chapters – before summarizing the value premises and basic beliefs and assumptions this study is based on.

Assumptions here are understood as both general 'philosophical' assumptions and what Popper called "commonsense assumptions" or "commonsense background knowledge" (1972: 33). The first are largely shaped by my own socialization, personal experiences and imagination, whereas the latter are the starting-point in our efforts to advance knowledge (cf. Popper 1972: 34-7). Here some remarks need to be made on the notion of common sense. Whereas Popper views common sense as a good basis to depart from in scientific inquiry, he thinks that further growth in knowledge is only brought about by critical realism (ibid.: 34). He therefore distinguishes a 'commonsense theory of knowledge' and a 'commonsense theory of the world; the former is refuted as it is deemed self-contradictory, while the latter is synonymous with Popper's 'realism' and hence a prerequisite for the advance of knowledge (cf. Popper 1972: 105). Popper is aware that common sense is "a vague and insecure thing" (ibid.: 33). But he does not make much effort to put it on a more definitive basis. Yet as early as 1726, common sense was defined by the 'Secret History of the University of Oxford' as "the ordinary ability to keep ourselves from being imposed upon by gross contradictions, palpable inconsistencies, and unmask'd impostures" (cited in Geertz 1993: 93). Geertz, 'one of the most original and stimulating anthropologists of his generation' according to Contemporary Sociology, redraws common sense as much more than a mere matter-of-fact apprehension of reality by viewing it as a 'cultural system' (1993: 73ff):

> "There are a number of reasons why treating common sense as a relatively organized body of considered thought, rather than just what anyone clothed and in his right mind knows, should lead to some useful conclusions; but perhaps the most important is that it is an inherent characteristic of common-sense thought precisely to deny this and to affirm that its tenets are immediate deliverances of experience, not

[71] Bias in research, though, is not only based on the unconscious way of dealing with value premises, but can be attributed to personality traits, the force of tradition, and the influence of dominant interests and prejudices in the surrounding society (Myrdal 1973: 54-64).

deliberated reflections upon it. ... but common sense rests its [case] on the assertion that it is not a case at all, just life in a nutshell. The world is its authority" (Geertz 1993: 75).

Viewing common sense as a cultural system hints to its importance in our scientific endeavor. Common sense is embedded in several of the value premises *sensu* Lincoln and Guba (1985: 160-1), be it in the form of basic beliefs that shape our assumptions, axioms, and theories, or in the form of our social, cultural, and personal norms. Certainly it is not independent from theory, but the great advantage inherent in common sense is that it is not bound to a single set of theories but encompasses a good part of the collective knowledge of mankind. Moreover, I believe that common sense involves far more than mere empiricism but is imbued with rationality and logic.[72]

I believe that common sense and theory are important interplayers for two reasons. First, "any one focus or observation provides only one perspective; no discipline gives a complete picture; knowledge is at best partial ... No description, model, or theory is ever complete; what is required is a multiplicity of perspectives, each of which enriches and complements the other" (Lincoln and Guba 1995: 62). But even a multiplicity of theories cannot warrant that we approximate truth, as theories are *always* generalizing. I am convinced that the decisive link with the real-world experiences in our research environment can be established through common sense. Second, we have seen that the falsification paradigm is constrained once we accept the existence of multiple realities. In this respect, common sense proves a powerful tool to establish the *frame of reference* within which given theories may be considered non-refuted.

Bearing all the aforesaid in mind and recognizing the constraints inherent in the positivist paradigm, I refrained from picking a single theory or model as the exclusive focus of my research. Rather, I intended not to prejudge the importance of political, economic, or social factors but being duly attentive to any and all kinds of them whenever they were seen in the course of the research to be interesting and relevant to explaining human behavior related to the environment and its use (cf. Vayda and Bradley 1999: 169). In this sense, I sought to abstain from *a priori* judgements on the political nature of socio-economic realities, as is typical, for example, in Political Ecology. What *did* influence my study *ex ante* were my own norms, values, and what is called "root assumptions about the nature of the phenomena to be investigated" (Morgan and Smircich 1980: 491).

Following the – regrettably not too widely held – tradition of self-reflective scholarship, I wish to be both conscious and public about my own value premises, my basic beliefs, and root assumptions. My value premises *sensu* Lincoln and Guba (1985: 160-1) include:

rejection of value-free scholarship as a self-deceptive concept

affiliation with constructivist/naturalistic inquiry in that the findings of this study are believed to be but one vision of the phenomena in question. In contrast to naturalistic

[72] In my opinion, common sense also has a pragmatic component. In this sense it is somewhat akin to what Hesse calls the 'pragmatic criterion', that is the "increasingly successful prediction and control of the environment" (1980: 188). In other words, common sense may lead to pragmatic applications and, in a more theoretical sense, to pragmatic interpretations where mere theories – viewed by Duhem and Quine as being generally 'underdetermined' with empirical data (Hesse 1980: viii) – fail to provide elucidation. "Philosophers of science should perhaps disengage from the Popper-induced prejudice that pragmatic application has nothing to do with the logic of science" (Hesse 1980: 192).

inquiry in which qualitative methods are typically stressed (Lincoln and Guba 1985: 198)[73], this study is based on a fair amount of quantitative methods; not because quantitative data are understood as 'objective' hard facts, but as they are believed to better underpin the various points made

obligation to balance diverging perspectives in a strive for 'unbiased' inquiry; as self-evident this argument may appear in academic research, as rarely it is fully practiced in social sciences, nor perhaps in natural sciences

theory and common sense combined are believed to yield the best scientific outcome. Obviously, common sense alone is too weak a basis for meaningful inferences and conclusions. On the other hand, theories when isolated from the 'real world' are prone to be too general. I believe that common sense can help to bridge the gulf between necessarily generalizing theories and the 'real world' as encountered in the specific research environment.[74]

My basic beliefs or root assumptions encompass the following paradigms:

No victimization paradigm: in contrast to the peasant victimization theme recurring in the critical political economy[75] and political ecology literature of neo-Marxists (cf. Browder 1994: 46-7), rural or peri-urban residents dependent on natural resource use are not *a priori* believed to be victims of unscrupulous landlords or entrepreneurs.[76] In other words, these groups are assumed not to be exploited *per se*, though their labor relations with the rural or urban elite may – under given circumstances – not be of equal benefit.[77] Nonetheless, I departed with a particular notion of the groups to be studied, viewing rural inhabitants and peri-urban residents as autonomously acting individuals who, depending on their specific environments, have choices with respect to labor allocation, resource use, and consumptive patterns. It is my conviction that we truly take these groups seriously only when, as to their well-being, we acknowledge both exogenous factors (e.g. the physical, political, and macro-economic environments) and endogenous factors, that is social factors originating at the household-level (e.g. formal and non-formal education, creativity, innovation, attitude toward risk).

No antientrepreneurial paradigm: somewhat related to the above topic is my conviction that entrepreneurs should not be *a priori* blamed for any perceived misery of people

[73] Lincoln and Guba (1985: 198-9) hold that the prevalence of qualitative methods in naturalistic inquiry does not root in an antiquantitative stance; but in practice naturalistic investigators lean strongly on qualitative approaches because these "come more easily to the human-as-instrument."

[74] To some extent, this is in contrast to Popper who confines the role of common sense in the process of advancing knowledge to the starting-point of scientific inquiry; knowledge then grows by way of "the great instrument for progress", viz. criticism (Popper 1972: 34). Yet I am convinced that in an advanced stage of inquiry too, the interplay between critical theorization and common-sense reasoning is a most fruitful endeavor.

[75] Such political economy perspectives include dependency, Marxist, and related historical-structural approaches (Brown 1991: 207).

[76] This in order not to violate the requirements of naturalistic inquiry that, first, no manipulation of the antecedent conditions of the behavior studied is implied on the part of the inquirer, and that, second, he or she does not impose *a priori* units on the outcome (Lincoln and Guba 1985: 8).

[77] Doubtlessly, equity issues are central when conducting socio-economic research. But as much as no one would expect a fully industrialized society to be egalitarian in terms of benefit sharing, it should not be indiscriminately talked of exploitation when unequal distribution of benefits is encountered in the South. After all, it should first be analyzed whether or not the allegedly exploited feel exploited themselves and, moreover, whether according to societal standards in the given country or region this group of persons is clearly worse-off than the comparable average. Strange as it appears, hardly anybody talks of exploitation when those working along an assembly line in the car industry in the North earn only a tiny fraction of their bosses' income.

dependent on them. Unfortunately, an antientrepreneurial stance is widespread among anthropological and sociological scholars, who often seem to adhere to a naive image of traditional societies living in harmonious peace with their environment as long as they are not incorporated into the capitalist world system. In contrast, I believe that the market economy – not to be put synonymously with the capitalist world system – bears both opportunities and risks for low-income groups. I am convinced that it is precisely the social scientist's task to elaborate the pros and cons of the former's market involvement and, in an unbiased fashion, the very nature of their relationships with and dependencies on middlemen and entrepreneurs.

No biodiversity-threat paradigm: notwithstanding the serious impact tropical deforestation has on the conservation of biodiversity in other parts of the Amazon, its Southwestern fringe in northern Bolivia has, for the time being, largely been exempted from environmental degradation (see Section 1.4). Interestingly, the region is assigned only (very) low to average biological-ecological value relative to other parts of Bolivia (Ibisch *et al.* 1999),[78] and irrational land use affects probably less than two percent of the land surface. The precarious socio-economic conditions the majority of the region's (rural) population is faced with is seen as a far more significant impediment to the region's development than any perceived or real loss of biodiversity.

Farmers first paradigm: in accordance with the prominent call "farmer first" (Chambers *et al.* 1989), I can but subscribe what Eva König from the Ethnological Museum in Hamburg said when recently asked about a "Call for Research and Action", which suggested that in Bolivia biodiversity and conservation have the same goals (Ibisch and Beck 1998: 403): "I do agree with the CALL in general but a primary goal of biodiversity conservation and development should / must be the satisfaction of the basic needs of the local population. We should be conscious of the fact that those who define the goals of development also define those of conservation – and those who define the goals are still – and once more – the developed countries. If we don't change our attitude and our point of view we'll just improve once more 'goals' shaped by *our* own needs" (cited in ibid.: 403-4). As a consequence, and in a certain repetition of the aforementioned paradigm, I believe that it is the rural population of northern Bolivia that, in a dialogue with the stakeholders from urban areas, needs to define its development objectives. Even if conservation aspects should not be in the foremost front of such a participatory prioritization – something very likely to happen – this vote should be accepted by any person or interest group from outside the region, as long as, and only if, the lot of the rural inhabitants is bettered.

[78] The biological-ecological value was determined by summing up diversity values of taxa, endemism values, habitat diversity values, ecological processes values, and biogeographical and evolutionary processes values. The comparatively low ranking of northern Bolivia's biological-ecological value owes primarily to the low rate of endemism encountered, but also to the extraordinarily high rates of alpha-diversity identified for the pre-Andean and sub-Andean forests (Ibisch *et al.* 1999). Compared to these Yungas mountain forests and some transition zones, "the level of endemic diversity is considerably lower in the lowlands. ... The eastern parts of the Bolivian Amazon region seem to have a biogeographical influence of the Rondônia centre and lower species richness" (Hanagarth and Szwagrzak 1998: 297). A recent study executed by the Superintendence of Forests yielded 283 tree and palm species for the entire northern Bolivian Amazon, out of which 15 species accounted for 13% of total abundance (CFB 1999: 2). This confirms the findings from a study in the early 1990s which had established 278 tree and palm species throughout the region (DHV 1993a: 7). These are comparatively modest numbers, as for the whole of Bolivia the number of recorded tree species totals 1950 and may be as high as 2500 (Muñoz 2000: 4).

Limitations to the study

1.3.4.1 Biases of contact with rural poverty

Working in the broader context of rural development, a central topic is rural poverty. Though not explicitly mentioned in the title of this research, issues of poverty – both in rural and urban areas – were frequently touched upon. Apart from the fact that there is a diverse set of poverty definitions (e.g., Chambers 1987, Farrington *et al.* 1999), rural poverty is a tricky issue to deal with. This is particularly the case for a foreign and largely urban-based researcher who, as an 'experience distant' outsider (Scheper-Hughes 1992), is subject to various biases. Chambers (1993: 13-23) outlines six sets of biases typical for, among other people, rural researchers; these biases were sought to be addressed the following way:

Spatial biases: urban, tarmac and roadside
The study sought to carefully balance peri-urban and rural aspects of NTFP-based and hence regional development. Around 300 interviews were conducted in the rural areas by the researcher himself, while the major part of a similar number of interviews in the peri-urban areas of Riberalta was carried out by a research assistant supported by the researcher (see Section 5.2). In order to avoid a roadside bias in the rural areas – the virtual absence of tarmac roads impeded even the slightest chance of a tarmac bias – extensive river travelling ensured that some of the region's remotest and a fair number of remote river-based settlements were included in the sample. However, the limited number of permanently inhabited rural settlements situated within a walking distance of more than two hours away from a road or river were underrepresented in the sample. Strictly speaking, the study has a road *and* river bias.

Project bias
Evidently there is a risk to be pointed to those rural places where, according to GO and NGO information, 'something is happening'. This project bias was conveniently avoided by including a sufficiently high number of settlements beyond the reach of governmental or non-governmental support. Out of the 163 settlements covered by the village-level survey, 37% had never received support by a government agency or an NGO. Among the remaining settlements, less than 20% were actively involved in extension activities.

Person biases
There is a complex set of *person biases*: *elite bias*, *male bias*, *user and adopter biases*, and *active, present and living biases*. The *elite bias* proved a certain limitation during the village-level survey. As neither the settlements nor their inhabitants were known to the researcher from previous visits, it was necessary to select the interviewees among those who were named by the inhabitants when asked for a person knowledgeable in the affairs of the respective settlement. These were elected or appointed village leaders in the case of independent communities, and patrons, administrators, or caretakers in the case of *barracas* and, consequently, the settlements' elite. Since in this first research phase the survey aimed at generating general data on production potentials, resource endowment, demographic trends etc., this restriction seemed justified. When conducting interviews at household level during the second phase, a random sample drawn both from the peri-urban and rural households ensured that persons other than the elite were represented in the sample proportional to their numeric importance. Likewise, this approach guaranteed that female heads of households, rural single women, and widows were duly included. In addition, a *male bias* was sought to be avoided by involving female household members into the interview wherever possible. Finally, random sampling warranted that *user and adopter biases* or *active, present and living*

biases were not to become a concern. Random numbers assigned to the households obliged the researcher to approach the interviewees thus determined rather than looking for those who were willing to participate in the study. Among the households selected at random, willingness to participate was highly satisfactory.[79]

Dry season bias
The rural inhabitants' agro-extractive calendar determined the timing of the interviews rather than the occurrence of the dry or rainy season. For instance, the *barracas*, the majority of which is populated only during the collection period for Brazil nuts, were visited from December through March and, hence, at the peak of the rainy season. The drier period of the year was mainly used to conduct the interviews in the independent communities, since these are inhabited throughout the year.

Diplomatic biases: politeness and timidity
These biases posed a more serious restriction on the researcher. Understandably, rural inhabitants, especially those in barely visited settlements, have a keen interest in involving any outsider approaching them in a discussion on potential services to be provided to the settlement, if not the household as such. This very well founded expectation toward the outside researcher in turn is known to cause timidity with him or, as Haswell (1975: 213-4) puts it, 'fear of involvement'. The researcher sought to solve the dilemma by 1) making a clear statement of his mission at the beginning of the interview, 2) reserving some time for providing space for the concerns, questions etc. of the respondents at the end of each interview. Though formally separated from the interview, this integral part of the conversation proved to be very rewarding for both the counterpart and the interviewer as regards confidence building and in general terms of human relations.

Professional biases
Without doubt any researcher is subject to professional biases. In addition to the bearing that his or her value premises have on the research, the professional background may prove a severe restriction when seeking to tackle the various categories and aspects of rural development. In this respect, the inter-disciplinary orientation of the collaborating institutions and my own multi-disciplinary background and interest helped to reduce the negative repercussions of professional blindness.

1.3.4.2 Further constraints

The six biases as outlined by Chambers (1993) are necessarily to be addressed but they are by no means sufficient when considering limitations to the study. While virtually all of the shortcomings listed by Chambers are located at the broader methodological level, numerous pitfalls wait for the researcher when selecting the appropriate set of research methods (see Elster 1989). Echoing the limitations as faced by Monela *et al.* (2000) when investigating household livelihood strategies in the Miombo Woodlands of Tanzania, I summarize the procedural limitations to my study as follows:

"The most important constraints to the study included:

The problem of recall of past information due to failure of farmers to remember clearly unrecorded past events especially past trends of income and expenditure. To reduce the

[79] Direct respondent refusal occurred only once, while concealed unwillingness to respond forced the researcher in two cases to replace a household through another selected at random. One elder head of household was not fully capable to follow the interview because of a chronic disease; this household was replaced likewise.

problem more time was spent per respondent and only detailed data for the past three years were collected.

Farmers were occupied by farming and other activities and hence were not prepared to spend much time being interviewed.

Farmer's conditioned responses focused on their immediate needs. They therefore tended to give answers in the hope that they might get some assistance in return. In order to contain this problem a multi-method approach was employed.

Erroneous information given intentionally by few informants so as to gain prestige or humbleness by exaggerating or underestimating certain facts or events."

In addition to these shortcomings, Posey (1992: 22) points to the different cognitive 'realities' of researcher and informant resulting from their different cultural backgrounds and suggests that "for mutual interpretation to occur, sharing of realities must also occur." Towards this end, I sought to spend as much time in the field as possible to learn about the *campesinos'* views of their 'reality', to experience their living conditions, and to share, if for a limited time, their day-to-day needs.

1.4 Study region: the northern Bolivian Amazon

Physiographic conditions and demography

The northern Bolivian Amazon, or northern Bolivia, was chosen as study region.[80] Covering an area of about 100,000 km², it lies between 9°41' and 12°30' south latitude and 65°17' and 69°34' west longitude; it is bordered by Peru to the west and Brazil to the north and east (Map 1). The region comprises all five provinces of Pando Department, the Province of Vaca Diez (Beni Department), and the northernmost part of the province of Iturralde (La Paz Department).

As the developments at the micro and meso levels within the region can only be meaningfully analyzed in a broader, macroeconomic and macropolitical context, the strict parameters of an isolated study region hardly apply. Though the focus of this study are the socio-economic implications of a century of rain forest use in the northern Bolivian Amazon from both the rural and peri-urban households' perspective, the region's integration into national and international systems will repeatedly be referred to. Consequently, developments in other parts of the Bolivian Amazon[81] will also be touched upon such that, for example, the Department of Santa Cruz falls into the broader purview of this study.

[80] Physical and cultural geographers provide varying definitions of 'region' (Hawley 1950: 86-7). This study follows that of Woofter defining region as "an area within which the combination of environmental and demographic factors has created a homogeneity of economic and social structure" (NRC 1935: 142).

[81] The Bolivian Amazon as a whole includes the entire Departments of Beni and Pando, and parts of the La Paz, Cochabamba, and Santa Cruz Departments. It covers 595,661 km², of which 68% is forest, and the remainder mostly grasslands. As of 1990, only 5.6% of the original forested area had been cleared for agriculture and other purposes (CUMAT 1992; Kaimowitz 1997: 537).

Rainfall is high but seasonal, with 60% of the annual precipitation of around 1,800 mm being received from December through March (cf. Beekma *et al.* 1996: 10). Despite the prolonged drier period from June to August the predominant vegetation type is tropical moist forest with abundant rubber (*Hevea brasiliensis*) and Brazil nut (*Bertholletia excelsa*) trees (Harcourt and Sayer 1996: 220).[82] The region's population in 1998 has been projected to be 157,000 (cf. MDSMA 1996: 26-8) or 168,000 (cf. INE 1997e), two-thirds of which reside in the three principal towns, viz. Riberalta, Guayaramerín and Cobija. According to the same projections, the rural population in 1998 has been around 50,500 or 56,000, respectively.[83] The region is sparsely populated, even at national standards, while Bolivia in turn has one of the lowest population densities in Latin America (cf. Miro 1964: 18). Encompassing around 9% of the country's territory, northern Bolivia is home to only 2% of its population (cf. INE 2000a, b).

Given a population density of around 1.6 per km², limited accessibility, and the distance from major markets, pressure on the forest resources is comparatively low. About 94% of the land surface are covered by largely intact forest, 3% are under forest fallow and another 3% have been cleared for arable and pasture (Beekma *et al*. 1996: 53). Between 1986 and 1990 the annual deforestation rate was 0.15% (DHV 1993a: 1).[84] Forest clearance mainly owes to the expansion of cattle pastures along the Brazilian border near Cobija and Guayaramerín, as well as an increase in land cleared for agriculture in the surroundings of Riberalta.[85]

In 1998, the northern Bolivian Amazon had an estimated 700 rural settlements, about two-thirds of which were permanently inhabited. There were some 300 *barracas*,[86] most of which had been established in the first half of this century. In addition, there were approximately

[82] According to unpublished data of CDC-Bolivia, Amazonian moist forest covers an area of 97,327 km² in Bolivia (Harcourt and Sayer 1996: 222). This area is identical with the study region, as it is the zone corresponding to the natural distribution of rubber and Brazil nut trees in Bolivia.

[83] In terms of relative growth, INE's projections appear exaggerated. Based on the National Census 1992, they imply annual urban and rural growth rates of 5.5% and 5.0%, respectively. In comparison, the projections of MDSMA (1996) are more conservative, with urban and rural growth rates of 4.6% and 3.1%, respectively. MDSMA's projections of urban growth appear more realistic: Riberalta, for example, which accounts for around 52% of the region's urban population, grew annually by 4.4% in the period 1992-98 (cf. Secretaría Regional de Salud 1998). Though the growth of Guayaramerín and, in particular, Cobija is likely to have been more dynamic, urban growth throughout the region hardly exceeded 5% per year. INE's projection of the rural population seems closer to reality: our village survey 1997, for example, suggests a rural growth rate of 4.4% annually in the period 1992-97. Yet while relative growth rates derived from INE's projections seem generally inflated – the data account for census omission (*omisión censal*) in 1992 – its absolute figures may not be too far from reality. In general, however, demographic vagueness can be viewed as an indication of political neglect. Fox and Atok (1997: 31), for instance, argue, "The lack of information on forest population densities is as much a consequence of the lack of information on village locations as it is a result of political or institutional interests", or disinterest, one might add.

[84] Notwithstanding the generally low deforestation in northern Bolivia, there are marked variations within the region. From 1986 to 1993, for example, the province of Nicolás Suárez faced a mean annual deforestation of 1.52%, four quarters of which were due to the expansion of cattle ranching (Keizer 1993: 42).

[85] Deforestation in the proximity of Riberalta is not a recent phenomenon. As early as 1906, at a time when its population did not exceed 2000, large-scale forest clearance for cattle pastures and fields for the cultivation of maize, oranges, plantains, and banana was reported from the surroundings of Riberalta (Von Vacano and Mattis 1906: 97).

[86] The number of *barracas* in Pando and Vaca Diez was 423 in the mid-1980s (Pacheco 1990b: 33), out of which 347 were registered in Pando alone (Ormachea and Fernández 1989: 17). In the early 1990s, the number of *barracas* in Pando and Vaca Diez combined was estimated at approximately 300 (DHV 1993b: 1). Though a considerable number of *barracas* had been converted into independent communities by that time, this figure was clearly underestimated but, given the ongoing process of conversion, seems very realistic for the late 1990s.

400 independent communities.[87] They mainly emerged after World War II, in particular following the Agrarian Reform in 1953 (Ormachea and Fernández 1989: 27f). About one third of them had only been founded in the 1980s or 1990s. The conversion of *barracas* into independent communities is an ongoing process (see section 4.3).

All settlements in northern Bolivia are economically, politically, and socially orientated towards one of the towns in the region, each of which has its own sphere of influence. The largest sphere is dominated by Riberalta, extending to the Orton River in the north(west) and to the Yata River in the east. Riberalta's prominent role is due mainly to the absence of an extensive road network and the resulting importance of river transport.[88]

The macroeconomic and political framework

The forest sector is an important source of employment and income in the Bolivian lowlands. Nonetheless, the contribution of forests to the national economy is slight despite their great potential. In terms of Gross National Product (GNP), their contribution has always been less than 3 percent (Harcourt and Sayer 1996: 222), averaging 1.2 percent in the period 1991-96 (cf. INE 1996a). Though rather negligible at national level, forest-derived income is crucial on a regional scale. In this context, the southern and the northern Bolivian Amazon show marked differences. The former, mainly consisting of the Santa Cruz Department, has traditionally been the stronghold of the Bolivian timber industry. In contrast, the economy of the northern Bolivian Amazon has historically been based on NTFPs. It was the exploitation of rubber that brought about the region's integration into the world economy. Politically, however, the region has been characterized by profound isolation that continues up to the present day.[89] Political neglect can be attributed mainly to three factors. First, Bolivia has traditionally been dominated by a white and partially indigenous elite from the highlands.[90] Though the Bolivian lowlands have gradually caught up over the past decades, their economic

[87] As for the *barracas*, estimates of the number of independent communities are contradictory. According to Ormachea and Fernández (1989: 17), there were 376 independent communities in Pando in the mid-1980s, whereas DHV (1993a: 12) puts their number in Pando and Vaca Diez combined at nearly 350 in the early 1990s. Given the ongoing conversion of *barracas* into independent communities, the latter's number is expected to have risen to around 400 by the turn of the century.

[88] Situated just below the confluence of the Beni and Madre de Dios Rivers, Riberalta is well connected with the region's two principal rivers and their main tributaries, such as the Orthon, Yvon, Geneshuaya, Manupare, Manurimi, Manuripi and Tahuamanu Rivers. The intricate system of waterways, albeit disparaged as leading "from nowhere to nowhere" (Osborne 1955: 32), is indispensable for maintaining the transport of men and materials, in particular during the Brazil nut season. The La Paz-Riberalta and Riberalta-Cobija highways, for example, were not completed until the late 1980s. Even today, they are hardly passable during most of the rainy season due to the want for a durable surface and an adequate drainage system.

[89] Fernández and Pacheco (1990: 6) hold that a specific and integral policy for the development of the northern Bolivian Amazon does not exist. "More generally, extreme political instability and scarce resources have always limited the reach of the national government into the remote vastness of the Oriente" (Jones 1985: 35).

[90] The highlanders or *kollas* have traditionally viewed most of Bolivia's eastern lowlands or "Oriente as a wild frontier, a land where uncivilized Indians stalk jaguar-infested selvas [forests], and where caymans and serpents everywhere bask ominously in the humid heat" (Jones 1985: 2). In contrast, the local stereotype of a *kolla*, as cultivated by the *cambas*, "demeans him as sullen, withdrawn, squat, dark-skinned, more than slightly bovine, lacking in the social graces, and with an offensive body odor" (ibid.: 3). Jones associates these attitudes with post-Columbian historical relations between the country's highland and lowland regions: "The Oriente has never figured more than marginally and fleetingly in the mainstream of national history—indeed, the mainstream itself has been largely defined by highlanders. Held to be backwater by governments notoriously highland in composition and character, the Oriente has been neglected in terms of the distribution of national power and resources" (ibid.).

and political developments are chiefly determined by the mixed white-mestizo elite from Santa Cruz. Second, physical isolation along with the region's low GNP contribution attracted little political attention. Finally, the low population density provides little incentive for vote-catching politicians from La Paz to engage in regional development.

In light of its limited political weight, the region could expect little outside support when slipping into an economic crisis in the wake of the rubber collapse (see Section 2.9). Within a few years' time, rubber production came to a virtual standstill, aggravating the problems inherent in the region, viz. 1) the increasing impoverishment of the *campesino* sector, 2) the concentration of resources and capital in a restricted entrepreneurial sector, 3) the absence of state policies, 4) the regional disarticulation and disconnection with the rest of the country and, and 5) the tight dependence on the Brazilian economy (Fernández and Pacheco 1990: 1). The more it is surprising how much economic weight the region has gained over the past years. The Department of Pando, for example, raised its GDP from around US$33 million in 1988 to US$58 million in 1997, equivalent to an annual growth rate of 6.5% (cf. INE 1997g). The region as a whole contributed around 5% to the total exports of Bolivia in 1999 (cf. CFB 2000a: 1-2). When focusing on the forest sector alone, the vital role of northern Bolivia becomes even more obvious. Out of the total export of forest products worth US$73 million in 1999, two-thirds (around US$48 million) accrued to northern Bolivia.[91]

In spite of the region's general political neglect recent political reform may spur regional development efforts. It was especially the government of Gonzalo Sánchez de Lozada (1993-97) that provided the political basis for profound reforms. It can conveniently be described as the most innovative administration in Bolivia after the post-revolution government of Victor Paz Estenssoro in the period 1952-1956 (cf. Jost 1996). Among the highlights of the legislative reforms passed by the Sánchez de Lozada government is the Law of Popular Participation (*Ley de Participación Popular*) passed on 20 April 1994 as *Ley № 1551*. One of its key elements is the reallocation of government funds in an unprecedented strive for devolution.[92] Formerly, about 90% of the state's financial resources had been allocated to the development axis La Paz-Cochabamba-Santa Cruz (Martínez 1996: 104). The 'urban bias' in government policy so typical for the Southern Hemisphere (Williamson 1988: 441-2) is underpinned by the fact that the rural areas generally received less than 10% of government funds (Martínez 1996: 104). Under the new law, however, both rural and urban areas benefit from the resources provided by the national treasury.[93]

Important goals of the Popular Participation Law are (Mertins and Popp 1996):

Municipalization of the land. While only urban municipalities existed before the reform, for the first time in Bolivia's history, rural areas were finally recognized as independent territorial units through the Popular Participation Law. As of November 1995, 308 communities already existed.

[91] In 1999, Bolivia's total export value amounted to US$1.04 billion (CFB 2000a: 1). Brazil nuts, timber and palm hearts from northern Bolivia contributed approximately US$31 million, US$15 million and US$2 million, respectively (cf. CFB 2000a-d).

[92] Devolution differs from decentralization in that not only are administrative tasks transferred from higher to lower layers of the administration but also political legitimacy (Rondinelli *et al.* 1983: 14-5).

[93] In 1993, the departmental capitals and the central axis as described above received 92.1% and 90.9% of the government funds, respectively. In 1995, all municipalities other than the departmental capitals received 61.1% instead of 7.9% two years before (Molina and Arias 1996: 42). Such a decentralization policy along with a dramatic reallocation of government funds is unprecedented in Latin American history.

Expansion of the traditional competency of the communities through transferal of corresponding resources.

Abolition of the preference to departmental capitals, and the distribution of tax money according to the number of inhabitants. Besides the regular or extraordinary financial allocations through the federal budget, the departments have at their disposal separate sources of income, for example highway tax. The most important source of income is the Regional Compensation Fund of the *Participación Popular*, through which a financial balance between the regions is to be supported through means of the Federal budget (Jost 1996: 65).

The legal recognition of approximately 20,000 OTBs[94], meaning the *'Comunidades Campesinas'*, the *'Juntas Vecinales'* and the *'Pueblos Indígenas'*, as well as their endowment with control rights dealing with the responsibility of the community (Art. 2).[95] The integration of the indigenous groups, containing over half of the total population, is to be supported through the Participation. This makes the law to one of the most important instruments of indigenous politics.

In addition to the Popular Participation, a novel Land Reform Law known as *Ley INRA* (*Ley № 1715*) was passed on 18 October 1996. A National Land Reform Institute (INRA) was created to execute the tasks outlined in Article 18 of the law (for the details, see Annex 1). For the first time in northern Bolivian history, the state made a serious attempt to address the "agrarian question" in a hitherto neglected part of the country by touching on the age-long – with few exceptions illicit – extraction of natural resources from the *latifundia*, that is the *barracas*. Promulgated by the reform-friendly government of Sánchez de Lozada (locally called Goni), the enforcement was largely left to the succeeding government of General Hugo Banzer Suárez.[96] Bolivia's ex-military dictator (1971-78) and his followers are not necessarily to be seen as uncompromising guarantors for a swift and rigid enforcement of the novel land reform.[97]

It needs to be borne in mind that, from a legal point of view, most land in northern Bolivia is state property. Usufruct rights, however, may be altered under the new legislation on forests (*Ley Forestal*) and the *Ley INRA* (see BOLFOR 1997). Parts of the new laws are conflicting, and it remains to be seen whether the legal reforms will benefit the intended target groups.[98] The process of proving land rights and granting legal land titles has just begun and is

[94] The *Decreto Reglementario N° 23858* defines the OTBs as designated in the Popular Participation Law (Article 3) as "basic unit of communitarian or neighborhood character that occupies a territorial space". According to their practice and status, OTBs can be registered as a peasant community (*comunidad campesina*), indigenous people (*pueblo indígena*), or neighborhood union (*junta vecinal*) (Martínez 1996: 106-7).

[95] By 25 July 1996, legal entities (*personerías jurídicas*) in Beni and Pando had been granted to 400 and 148 OTBs, respectively (Martínez 1996: 112). By the turn of the century, the figures are likely to have doubled, if not tripled.

[96] Since August 1997, General Banzer has been heading a 'mega-coalition' of ADN, UCS, CONDEPA, MIR, NFR, and PDC. The parliamentary opposition consists of MNR, IU, and MBL.

[97] Wittkamp doubts that the generally weak Bolivian state is able to enforce the laws in remote areas like northern Bolivia. She attributes unequal distribution to the region's feudal tradition that not only impeded the participation of masses but also that of the state (1993: 67).

[98] The new Forest Act "deals with *de facto* land occupation, stating that such occupation of government or private protection lands 'shall not result in the acquisition of property by usurpation.' ... Traditional indigenous settlements with open access for their culture and subsistence are not regarded as *de facto* occupants under the Act. ... Local communities will have priority for the granting of forest concessions in government-owned permanent production forest areas, while indigenous peoples will be guaranteed exclusive forest harvesting rights on community lands" (Anonymus 1996: 15).

scheduled to last a whole decade. In light of the vested interest of the divergent stakeholders this task implies a variety of pitfalls. Recently, for instance, INRA was criticized for not complying with the regulations as stipulated by the Land Reform Law. According to FOBOMADE (2000: 3), the regulatory norm 098/99 issued by INRA on 21 July 1999 was violating not only *Ley № 1715* but the Political Constitution when establishing a new procedure to certify state land without prior re-distribution of land tenure (*saneamiento de tierras*). It was feared that "the objective of this resolution is to distort the granting and awarding [process] to convert presumably state land into concessions for timber extraction, tourism and biodiversity, harming protected areas, immobilized forest and indigenous areas, and protected watersheds" (ibid.). "Additionally, communities of the provinces of Beni and Pando have denounced that the problem of property rights on forest lands has not been adequately solved. Community property rights over forests are not recognized, while large landowners occupy more and more lands and threaten peasants' livelihoods. The process of land concessions in that province lacks transparency and usually large companies invade peasants lands, as recently happened in the region of Puerto Rico and Conquista" (FOBOMADE 1999: 1). In summary, the effects of the recent political reforms remain yet to be seen.

2

ADVANCE OF THE EXTRACTIVE FRONTIER: RAIN FOREST USE IN NORTHERN BOLIVIA, 1820-1995

It was pointless to intend to understand the world of rubber production by means of established rules. Neither Aristotle nor Machiavelli were suitable; all my knowledge originating from a temperate climate was useless in Amazonia at 30 degrees.

Márcio Souza
Galvez Imperador do Acre, 1983

Rubber dominated the hearts and the consciences. It was impunity, libertinism and audacity. In its presence the conventions fell silent and the authorities bent, as if dominated by a sorcery. In that farwest of Bolivia – which was the rubber empire – ... governed only article 44, that is the caliber of the carbine 'Winchester'.

Juan B. Coímbra
Siringa, 1993

Analytical framework and research questions

Two issues are outstanding when analyzing the evolution of extractive economies in northern Bolivia since the early 19th century. First, the rise and fall of the rubber industry that provided the backbone of the regional economy for more than a century prompts the question why three boom periods altogether did not lead to more sustained socio-economic development. Second, the interplay between the rubber industry and other extractive economies has been based on a specific labor regime that was frequently criticized for being grossly exploitative of extractor populations or, as Weinstein (1986: 60) puts it, "The more vivid and colorful accounts of the rubber years have tended to portray the Amazon as a series of vast rubber estates owned by ruthless entrepreneurs and worked by miserable debt-peons permanently shackled to their *hevea* trails." It will be scrutinized to what extent extractive economies in northern Bolivia followed this purportedly general trend of Amazonia's rubber industry. In this connection, I shall address two of the guiding research questions formulated earlier:

Why have different extractive economies evolved since the early 19th century, and in what way did they interact with social, economic, and political changes?

Why and by what means did itinerant traders, middlemen, patrons, and firms establish economic ties and/or dependency relations in the NTFP trade?

To answer these and the questions in the preceding paragraph, I shall draw on the analytical framework employed by Bradford Barham and Oliver Coomes for reinterpreting the Amazon Rubber Boom (Barham and Coomes 1994a, b; 1996; Coomes and Barham 1994), as well as earlier works of Barbara Weinstein (1983, 1986). Since their focus is on the boom as it materialized in the Brazilian and, to a lesser extent, in the Peruvian Amazon, the case of northern Bolivia may provide further insight into the logic and evolutionary trends of the wild rubber industry and extractive economies as a whole.[99] Barham and Coomes (1994a: 38) stress that past attempts to answer those questions focused on the failure of plantation production in the Amazon and the patterns of social relations in the rubber industry rather than analyzing the microeconomics and the organizational logic of the wild rubber sector. But key explanatory factors are omitted, they argue, if no attention is paid to the interdependence between the principal contractual, market, and social relations on the one hand, and the following factors on the other (ibid.):

the basic characteristics of wild rubber and its extractive technology

the associated risks and transaction costs[100]

the relative scarcities of key productive factors

the nature of competition at various levels of the industry

the specific assignment of property rights.

By addressing these issues for the rubber industry of northern Bolivia, I shall argue that the region's extractive economies followed a logic that has much in common with the underlying rationale of those encountered elsewhere in Amazonia. This logic goes well beyond the simple themes of surplus drainage[101] and exploitation of labor as suggested by many scholars of the Amazon rubber boom. Despite their limited control of the forces shaping international demand for NTFPs, the stakeholders in Amazonia's extractive economies – patrons, traders, and extractors – exhibited marked flexibility in responding to changes in the world market for extractive products over more than a century and a half. They also succeeded in establishing institutional arrangements that allowed for the basin's difficulty of access, its notorious lack of infrastructure and basic facilities, as well as the nature of the resource base and the resultant requirements for extractive technologies. Though unequal exchange often characterized the relationships of the extractors to the patrons or traders, I shall emphasize that actual conditions were far more varied than the literature suggests.

[99] Despite its mounting importance for the development of the regional economy "the history of the Bolivian rubber boom has yet to receive a definite treatment" (Langer 1989: 232).

[100] "Transaction costs represent expenditures of time and effort as participants search out one another, negotiate an exchange, monitor its execution, and enforce its terms" (Coomes and Barham 1994: 241). Transaction costs *sensu lato* are incurred when running an economic system, being "the economic equivalent of friction in physical systems" (Williamson 1985: 18-9).

[101] For Latin America as a whole, Andre Gunder Frank was among the masterminds of dependency theory who held that regional development was largely prevented through a process of surplus extraction. "Frank ... argued that rather than supplying capital or contributing to the economic development of the region, international capital initiated a process of expropriation of its riches" (Dos Santos 1996: 158). This view was adopted by many scholars of the Amazon rubber boom who sought to explain why the boom did not result in more sustained economic development of the basin.

Exploitation of Peruvian bark in the pre-rubber era, 1820s-1859

Originally, the northern Bolivian Amazon was inhabited by scattered groups of indigenous peoples making their living from hunting, fishing, and forest product extraction (CIDOB 1979a: 11). Owing to their prevailing nomadic character few of them practiced swidden agriculture[102], and only a minority had been contacted by the missions in Moxos[103] and elsewhere.[104] In the early 19th century, this seclusion was undermined through the advance of Bolivian and Brazilian explorers in search of Peruvian bark[105], entering the region down to the middle reaches of the Beni River (Ormachea and Fernández 1989: 7). Following Bolivia's independence in 1825, their venture was facilitated by the creation of colonial territories, that is sparsely populated areas at the northern fringe of the country yet to be incorporated into one of the then eight departments (CIDOB 1979a: 12).[106] It was through the exploitation of Peruvian bark, locally called *quina*[107] or *cascarilla*, that a hitherto isolated region was linked to the world economy.

In 17th-century Peru *Cinchona* spp. was known to contain a palliative, later on named quinine, that reduced the effect of fever (Hemming 1987: 282). The generic name Peruvian bark applied to several quinine-yielding *Cinchona* barks, as Peru had become one of the main suppliers. In 1638, the private physician of the viceroy of Lima successfully treated the malaria of her majesty's wife, the Countess of Chinchón, through an extract from *Cinchona* bark after all else had failed to cure her (Hobhouse 1993: 25, Prance and Prance 1993: 73). The 'royal' treatment prompted Linnaeus to name the plant for the countess in his botanical nomenclature[108] (Prance and Prance 1993: 73) while, for the same reason, the Jesuits fashioned *cinchona regia* as vernacular name (De Mesa *et al.* 1997: 370).

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[102] This mode of making a living was typical for all indigenous peoples who did not confine their territories to the Amazonian floodplains: "The dense forests between the rivers of Amazonia were, however, the region's most extensive habitat. Here agriculture was more difficult, and the dispersed nature of the wildlife meant constant movement for those who hunted it. In this environment groups were small, seminomadic, and only marginally involved in agriculture" (Lockhart and Schwartz 1989: 275). The upland sites far from the rivers were preferred by some Indians as they were far less infested by mosquitoes (Ballivián 1890a: 33).

[103] The geographical expression 'Moxos' subsumes some 200,000 km² in what now is the Beni Department; three quarters are covered by tropical savanna, reaching at its northern fringe nearly to Riberalta; the remainder consists of forested land in the lower Andean slopes and the northern Chiquitos Uplands (Block 1994: 11). Prior to the rubber boom, the Moxos plains saw flurries of economic activity centering on the extraction of NTFPs such as vanilla, bees wax, and Peruvian bark (Jones 1985: 11).

[104] Since 1764, attempts of the Franciscans to contact the *Araona* and *Toromona* – in those years living along the Madre de Dios River – had been frustrated by the difficulty of access and "the inconsistent character of the Indians catechized" (Ballivián 1890b: 4).

[105] The bark derived from *Cinchona* spp. contains thirty alkaloids, the most prominent of which is quinine (Prance and Prance 1993: 72). It is known under the following names: Quinine Bark, Quina, Quinine, Kinakina, China Bark, Cinchona Bark, Yellow Cinchona, Red Cinchona, Peruvian Bark, Jesuit's Bark, Quina-quina, Calisaya bark, Fever Tree (Raintree 1999: 1).

[106] In 1842, the Beni Department had been founded by President José Ballivián in an attempt to affirm Bolivian sovereignty on the eastern rimlands (Tambs 1966: 257). National integration was sought to be strengthened by creating the National Delegation of the Rivers Purus and Madre de Dios in 1890 (Fernández and Pacheco 1990: 6). Reinforced by the creation of the *Territorio Nacional de Colonias del Noroeste* in 1900 (CIDOB 1979a: 14), it gave way to the Pando Department and the Province of Iturralde in 1938 (Fernández and Pacheco 1990: 6). The Province of Vaca Diez had already been founded in 1900 under the rule of General Pando (CIDOB 1979a: 17)

[107] In the Quechua language, *kina* (or *quina*) means 'bark' (Smith 1990: 260).

[108] Though repeated time and again, the story of the countess may not even be true, as A.W. Haggis (1941) doubts the authenticity of the original account which owes to Sebastian Bado, a seventeenth-century Spanish

The Jesuits dominated the early trade in Peruvian bark, incorporating the Amerindian population into its commercial extraction (Hobhouse 1993: 26, 32). During their trade monopoly from 1651 to 1660 (Prance and Prance 1993: 73), the bark entered Europe under the name Jesuit bark (Block 1994: 120). In 1737, the French explorer Charles de la Condamine became the first to scientifically describe the plant and its effects (Estrella 1995: 26).[109] The antimalarial drug derived from it became so much sought after that the producers in Colombia, Ecuador, Peru, and Bolivia could hardly meet the demand. The resultant rise in prices[110] reinforced their attempts to maintain a tight monopoly on production by prohibiting the export of seeds or living plants (Balick and Cox 1996: 27-8). Continued domestic exploitation, though, led to indiscriminate collecting that threatened the very existence of the species (Prance and Prance 1993: 73).[111]

In 1820, Pelletier and Caventou isolated the quinoline alkaloid with the highest antimalarial effect in the bark and named it quinine (Raintree 1999: 2). With its synthesization still unknown, quinine producers continued to rely on *quina* supplies from wild trees. Though many species and varieties of *Cinchona* had long been known, exploitation had been significant only in Ecuador and Peru until it became known that *C. calisaya* Wedd. has the highest concentrations of quinine (Block 1994: 160). In the 1820s and 1830s, this discovery transferred the *quina* rush southwards into Bolivia (Fifer 1972: 109). Here, the early years of bark exploitation were characterized by an open-access regime, as the Bolivian government had declared "the forests ... open to all who choose to enter them" (Gibbon 1854: 147). The only prerequisite was a simple permission to be obtained from the respective provincial authorities (Pardo 1951: 83). Temporarily recruited work crews combed the forests where they met with adverse conditions:

> "The regular rainy season will soon set in, when all the *cascarilleros* (as the bark gatherers are called) carry the bark home. They enter about the commencement of the dry season, or about the middle of May; roam through the wilderness. When they meet with trees, a little house is built for protection at night, under which the bark is kept dry. The tree is felled by an axe, the bark stripped off, dried, made into small bundles, and carried on the backs of men—who are generally mestizos—to the nearest point at which a mule may be brought. This life is one of great hardship; the workmen are often caught in the forest without supply of provisions. In case of fever, however, they are well supplied with quinine; but many of them die" (Gibbon 1854: 44).

Initially, the Bolivian core area of bark production was at the Andean foothills in the Yungas near La Paz whence it reached to Caupolicán (today's Provinces of Iturralde and Franz Tamayo)[112]; as the bark trade reached its peak, extraction extended well into the Beni plains

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doctor; thus, Linnaeus not only compounded the countess story but committed the misspelling of the Countess' name (Smith 1990: 261).

[109] La Condamine was likewise the first European to note the value of rubber, which he formed into bags to protect his scientific instruments (Davis 1996: 211).

[110] Wholesale prices in Paris, Amsterdam and London were around £1 per pound in 1780; as imports from South America increased after 1820, prices dropped, but soared again to £1 per pound after 1840 (Hobhouse 1993: 34). This price is equivalent to approximately US$100 in today's dollars (cf. Twigger 1999: 19, Friedmann 2000).

[111] In 1795, von Humboldt reported that about 25,000 trees were lost annually in the Ecuadorian region of Loxa alone (Hobhouse 1993: 32). Predatory exploitation was still reported from the western slopes of the Ecuadorian Andes in the mid-19th century where stripping *Cinchona* bark left many trees dead (Spruce 1970: 240-1). In mid-19th-century Bolivia, "there was no doubt that the forests of Yungas have been nearly stripped of this valuable [cinchona] tree" (Gibbon 1854: 193).

[112] From 1842 to 1856 Caupolicán had been a province of the newly founded Department of Beni (Pardo 1951: 89) before it was restored to the La Paz Department (Quiroga 1999).

around Reyes[113] and Santa Rosa (Fifer 1970: 118).[114] In those years, Rurrenabaque became the center of *quina* trade where hundreds of boats plied around to transport the precious freight from the forest (Ballivián 1896a: 4). As early as 1829, the government of Marshal Santa Cruz imposed rules on bark exploitation, restricting the access of foreigners to the trade. In the ensuing years, the government made increasing efforts to control the trade and finally, in 1837, decreed a five-year ban on bark exploitation (Pardo 1951: 150). As a result, annual exports dropped from 20,000 quintals[115] (920 metric tons) to 12,000 quintals (552 metric tons), reaching 3000 quintals (138 metric tons) after General Ballivián had curbed the export of *quina* in 1844 (Pardo 1951: 83-5).[116] Entrepreneurs from Santa Cruz, locally called *cruceños*, formed the hard core of Bolivians engaged in working Peruvian bark in the middle of the 19th century; they had established the old mission outpost of Reyes as one of the major collecting points for the middle and upper Beni region, whence the bark was dispatched towards the Pacific ports (Fifer 1970: 118). Initially, transport followed traditional trade routes out of the forest to Cochabamba and La Paz, and on to the Pacific port of Arica for final export to the overseas markets (Block 1994: 160).

Following the discovery that *Cinchona calisaya* contains the highest concentrations of quinine, collecting activities were redirected to the forests of the Beni and Mamoré drainages; Bolivia thus gained a virtual monopoly of the *quina* trade until 1850 (Block 1994: 160), which would particularly be undermined through Colombia's entering the lucrative market in 1855 (Markham 1862: 36-8). In the early Republican period in the 1840s, *quina* was Bolivia's only agricultural export commodity (Klein 1969: 4). In 1846, it accounted for 6% of the total value of national exports and contributed 7% of the government's income in taxes (ibid., citing from Dalence 1851: 305-5; Weddel 1853: 235-46, 249), representing the country's second most important export commodity (Pardo 1951: 84). During the early 1850s, bark sales comprised 10% of national income and demand was so high that indigenous groups from the western savanna of Moxos were mobilized to supply *quina* for an emerging world pharmaceutical industry (Block 1994: 149, 160).[117]

Intervention of the Bolivian government increased as the *quina* trade flourished. By law of Congress, all bark gathered in Bolivia had to be sold to a company, *Aramayo Hermanos & Cía.* (Pardo 1951: 89), which had a monopoly in this trade (Gibbon 1854: 111). To channel the resultant revenues, a National *Quina* Bank (*Banco de Quinas*) was installed for deposit and purchase of the bark. Founded in La Paz in 1850 (Pardo 1951: 88-9)[118], the Bank's role became ever more vital but controversies arose about its functioning. It was criticized for 1)

[113] In 1880, 400 quintals (18.4 metric tons) of Peruvian bark left Reyes on their way to Europe (Heath 1882: 11).
[114] Letellier (1964: 37) distinguishes the Beni plains into the 'northern Beni' and the 'ranching Beni' (*Beni ganadero*), that is a rain forest and a savanna zone. While the bark traders from La Paz entered the northern Beni via the southern Yungas, their counterparts from Santa Cruz traveled downstream the Río Grande and dispersed via the Iténez, Machupo, and Itonamas Rivers, thus reaching to Guayaramerín, Villa Bella, and, finally, Manaus (Ballivián 1896a: 3, Letellier 1964: 26).
[115] For the conversion of antique units of measurement, see Cortés and Ramírez (1998).
[116] The figures cited are official export data; it needs to be borne in mind that clandestine export was at least equal to, if not superior, to the volumes registered by the state (Pardo 1951: 86). The Bolivian government sought to reap the benefits from bark trade without major efforts. To this end, it signed a five-year contract with the firm of Jorge Tezanos Pinto in 1845, granting the annual exploitation of up to 4000 quintals (184 metric tons) in return for an annual payment of $b119,000 (De Mesa *et al.* 1997: 360).
[117] *Quina* demand was further spurred through the introduction of Quinine Tonic Water, originating in 1858 when Erasmus Bond achieved a patent for an 'aerated tonic liquid' (Smith 1990: 261).
[118] A branch was opened in Cochabamba in 1851 (Gibbon 1854: 147) in order to have an outlet for the high-quality bark from the Chapare region (see Pardo 1951: 90).

not properly controlling the weight and quality of the bark; 2) not standing firm against illegal extraction; and 3) not fulfilling duly the duties resulting from its monopoly, especially with respect to on-time payment of the bark delivered (Anonymus 1851: 4-7). At the same time, the government of General Belzu began to pursue a radical protectionist policy, stipulating high tariffs against English manufacture, promulgating laws that prohibited foreigners to engage in commerce, and creating further state monopolies; under Belzu's rule the production of Peruvian bark was about to reach its peak, becoming one of the most important fiscal entries (INE 1997f). Thus politics and *quina* trade became interrelated on an unprecedented scale:

> "The cinchona bark trade, in these previously neglected regions, influenced Bolivia's politics and economy, and created the conditions for the rise of the populist caudillo Manuel Isidoro Belzu. The rise and fall of the trade under Belzu's administration (1848-1855) exemplifies the importance of this trade as a pillar of this caudillo's nationalist-populist administration. His administration was a turning point in the struggle between the advocates of free trade and protectionism as they fought for control of the state. By giving the trade a central role in its developmental plans, Belzu's administration attempted to harness this vital economic activity to the rest of the country's economic growth. The trade was the main economic foundation for Belzu's populist politics, and the petty producers and merchants of La Paz and Cochabamba played a pivotal role in the development of those policies." (Pérez 1998: 1).

Belzu's government also stipulated the prices to be paid to the *quina* collectors and traders (Gibbon 1854: 111): three qualities were distinguished, for which the Yungas traders paid the collectors $b8-10 per quintal at the stump of the tree.[119] Delivered at the *Quina* Bank in La Paz, the Aramayo company bought the bark at $b30-60 per quintal and paid duties of $b18-25 per quintal to the government. Accounting for the freight of four dollars per quintal, the company's costs up to the seaport of Arica amounted to $b89 per quintal. As prices in Arica varied from $b50 to $b150 per quintal, the collectors of Peruvian bark received between 7 and 20 percent of the export price.[120]

The Bolivian *quina* boom had begun in 1847 (Becerra 1984: 23), just a year before Belzu came to power. In the early boom period, the State Bank received as much as 14,000 quintals (644 metric tons) of bark per year (Gibbon 1854: 112).[121] In 1869-70, bark worth some US$470,000 was sold in La Paz, with prices of US$41-54 per quintal (Fifer 1972: 109). The bonanza culminated in 1878 when a quintal sold at $b204 (around US$100) in the Yungas of La Paz (Ballivián 1896a: 4).[122] The boom not withstanding, Bolivian *quina* exports were subject to pronounced fluctuations. After a first peak was reached in 1848, exports plummeted to only 10 percent of this volume in the late 1850s; the government terminated the contract with the then sole exporter of *quina* – *Blayde, Quevedo & Cía.* – and declared free exportation with a 25% tax that would ultimately drop to 10% (De Mesa *et al.* 1997: 378). But bark trade recovered, yielding around 450 metric tons in 1860 (Hobhouse 1993: 36) and, in 1881, representing 8% of Bolivia's total export value (Bresson 1886: 248, cited in Klein 1969: 4). Overall production of wild bark was highest in 1880 when all Andean producers combined exported about 9000 metric tons (Hobhouse 1993: 45). The lucrative trade spurred

[119] This meant a highly competitive income for the collectors given that a man may cut two quintals per day which make one quintal when dried ready for the market (Gibbon 1854: 111).
[120] All prices refer to Bolivian silver dollars, equivalent to eighteen hundred Brazilian reis (Gibbon 1854: 304).
[121] The government of Bolivia issued a decree or proscription, forbidding the gathering of the bark from 1 January 1852 until 1 January 1854, as market prices in the northern countries were so low that the Bank was occasionally obliged to stop (ibid.: 112, 148).
[122] One of the boom's underlying reasons was increased British demand for quinine bark, as soldiers afflicted with malaria in India needed to be treated (Davis 1996: 170). This price was indeed high, as in 1851, for example, the highest quality of *quina* sold at only US$25 per quintal in the market of Cuzco (Gibbon 1854: 44).

the rapidly expanding European economies to strive for secure supply of quinine from *Cinchona* plantations in their overseas dependencies. Clements Markham, a young employee of the British India Office, was entrusted to smuggle the seeds out of Peru, an endeavor he accomplished between 1859 and 1862 (Hobhouse 1993: 41).[123]

The British established plantations of *Cinchona pubescens* Vahl [*C. succirubra* Pav. ex Klotzsch] in the Nilgiri Hills of India and later on Ceylon (Hemming 1987: 282, Raintree 1999: 2). Production costs were so drastically reduced that the price of the antimalarial drug dropped by a factor of sixteen in less than a decade (Davis 1996: 302). Around the same time, the Dutch established plantations of *Cinchona calisaya* in Java (Raintree 1999: 2). Initial results on the plantations were disappointing, as the exported species contained little quinine. Seeds of *Cinchona ledgeriana* R. et P., a Bolivian species reputed for its high quinine content, yielded far better results; they were smuggled by Charles Ledger in 1865 with the support of an Aymara Indian who was tortured to death by the Bolivian government upon discovery of the infringement (Prance and Prance 1993: 73, Balick and Cox 1996: 28-9). By 1880, the cinchona industry became functioning through the rapid expansion of Dutch plantations in Java (Hobhouse 1993: 45) and, by 1918, the production of quinine was totally controlled by the Dutch *Kinabureau* in Amsterdam (Raintree 1999: 2); this monopoly lasted until the fall of Java to the Japanese in World War II (Prance and Prance 1993: 73). Huge profits were reaped but Bolivia and Peru, from where the resource originated, were largely deprived of the benefits (Raintree 1999: 2).

It is held that the plantations in Asia knocked out the bottom of the Bolivian *quina* market in the 1870s (cf. Fifer 1970: 118; Becerra 1984: 23-5). However, the decline in bark production during the 1870s and 1880s was due to competition from Colombian exports rather than to that from Asian plantations (see Pardo 1951: 83, De Mesa *et al.* 1997: 378). Trade in wild bark would continue, if at modest levels, for a long time to come (see Sections 0 through 0). In the late 1890s, bark extraction persisted in Bolivia despite the destructive way of harvesting[124] and the low value added (De Rivière 1900: 432-3).[125] In 1900, *quina* prices recovered ephemerally, reaching nearly Bs.70 per quintal at the customs houses in Arica and Mollendo, before plummeting to half the price in 1902 (Pardo 1951: 98).

Exploitation of Peruvian bark illustrates the typical ups and downs in extractive economies whose products are bound for the world market, displaying a characteristic pattern of benefit distribution:

> "The history of the Cinchona tree provides a perfect example of how a natural product can go from folklore or indigenous use into world trade and then the drug market. It's also a perfect example of how indigenous people and countries with important resources are too often pirated and left out of the profit loop by industrialized nations and rich multinational profit driven organizations. Despite the fact that quinine and quinidine drugs were patented and capitalized on, Peru and Bolivia, from whence the discovery was made and resources extracted from, did not share in the patents or resulting profits. Their

[123] Viewed by many as sheer theft (e.g., De Mesa *et al.* 1997: 484), more of which kind were to follow (see the case of rubber below), it is rarely acknowledged that, after successful germination, the Kew Botanical Garden donated *Cinchona* seedlings to Brazil (see Dean 1995: 226-7). Moreover, Clements Markham affirmed that there was no law forbidding export of these plants, although a decree to that effect was issued by the Ecuadorian government several months *after* the collection of seeds had been embarked (Smith 1990: 266).

[124] Indiscriminate cutting was most pronounced in the accessible parts of the sub-Andean forests (De Rivière 1900: 432). Bark collectors faced a classical dilemma: either they stripped off the bark from the whole tree irrespective of its ensuing death, or they left parts of the bark for later harvests, knowing that the benefits were prone to be reaped by others (Domínguez and Gómez 1990: 24).

[125] Unlike Ballivián (1896a: 4), de Rivière (1900) made no mention of a market in decline.

natural resources were spirited away, smuggled out of their countries and world markets were created from ... resources indigenous to their country" (Raintree 1999: 4-5).

The boom and bust cycles in the *quina* trade made it difficult for both collectors and traders to solely rely on this product. As early as the 1870s, bark workers cast about for alternative means of livelihood, and those of the Yacuma plains returned to ranching, traditional activity of the Beni and one which had always formed a locally important subsidiary to bark extraction (Fifer 1970: 118). Others in the Reyes area remained in the forests and turned to collecting wild rubber (Quiróz 1996: 34). Among the names which later figured prominently in Bolivia's rubber boom are those of the old bark-collecting families – Salinas, Roca, Vázquez, Vaca Guzmán and Suárez[126], among others (Fifer 1970: 118).

Exploitation of Peruvian bark paved the way for the emerging rubber industry in several ways. First, the *quina* trade opened northern Bolivia to people other than the native population. The latter's increased contact with the market economy – delivering goods that the native subsistence economy could not produce – spurred their interest to become more involved in this form of commodity exchange. Second, the network of road and river transport established through the *quina* trade demonstrated how valuable commodities can be channeled out of the region.[127] Finally, labor recruitment for bark exploitation, in particular from the native population, had provided the organizational basis for the recruitment of rubber tappers. This point is crucial, as a paramount problem of Bolivia's lowlands was the scarcity and unreliability of local labor (Fifer 1970: 127, Jones 1985: 6).[128] In general, the production conditions linked to large- and medium-sized properties in the Amazon "demand labour for certain tasks in limited spaces and limited periods, after which the labour is laid off. The creation of a mobile work-force thus became the core of the regional occupation strategy" (Becker 1995: 65).

The salient features of northern Bolivia's pre-rubber era can be summarized as follows:

limited connection between the region and the outside world

the emerging *quina* boom opens up the region and involving the native population into its exploitation

quina exploitation is governed by an open-access and free-labor regime

the Bolivian state controls the trade but not the forest lands from which the bark is derived.

The early rubber era: emergence of rubber estates, 1860-1897

Rubber[129] was used most extensively in the manufacture of waterproof garments before Charles Goodyear perfected the vulcanization process (Block 1994: 161). He was granted a

[126] In 1872, Nicolás Suárez embarked on trading *quina* in Reyes, Rurrenabaque, and other small towns in the Yacuma Province (CIDOB 1979a: 13).

[127] While initially the Pacific ports were the only conduit, it was soon realized that the Madeira-Amazonas river system constituted a more lucrative outlet. It was through their travel down the Mamoré and Madeira Rivers to Manaus that the patrons and overseers involved in the *quina* trade learned about the new rubber industry and its promising gains (Ballivián 1896a: 5).

[128] Brazil faced the same problem, as "the scarcity of labor for productive and domestic works has been notorious in Amazonia since the early times of colonization" (Santos 1980: 61; my trans.).

[129] Rubber can be broadly distinguished into natural rubber and synthetic rubber. While the latter is produced from oil derivatives, the former originates from natural (wild or native rubber) or man-made forests (plantation rubber).

patent in 1839 (Coates 1987: 32), initiating a substantial increase in the world demand for rubber, in particular after 1870 (Richards 1993: 22).[130] In Bolivia, news on the rubber riches spread in the early 1860s and, subsequently, families involved in the *quina* trade began to establish rubber estates or *barracas* (Ballivián 1896a: 3-4, Chávez 1923: 15-6).[131] This point deserves special attention for two reasons. First, it shows the continuity of people and firms in the NTFP trade, a feature characteristic as well for future extractive economies in the region. Second, the establishment of *barracas* signaled a new production mode implying all the faults that would later be associated with the rubber industry. In fact, "access to land and rubber trees was not the primary determinant of the structure of the wild rubber industry. Far more important was the nature of capital and labor relations" (Barham and Coomes 1996: 61). It was in particular the form of labor arrangements, above all the debt-peonage system[132], that was to become the source of criticism (see Section 2.10.2). Coercion had quickly become the dominant form of labor consignment, as the free market would never have furnished the number of workers the rubber trade needed (Block 1994: 170).[133]

The Bolivian rubber era officially commenced in 1863 when Manuel Ugalde[134] was granted free navigation in the rubber zone and the privileges to exploit rubber (Abecia 1985: 151). In 1864, Santos Mercado established Bolivia's first rubber enterprise on the mouth of the Yata River, a tributary to the Mamoré; that very year, he effectuated Bolivia's first rubber exports – 76 Brazilian arrobas[135] or 1116 kg – via the Mamoré-Madeira Rivers (Ballivián 1896a: 5-6).

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[130] The tremendous evolution of world demand for rubber was not foreseen by people who could have known better. In the early 1840s, for example, the British Minister Charles J. Hamilton was offered a large concession in the Otuquis province that comprised some 40,000 km² along the upper Paraguay River. But Hamilton declined the offer because "the area, aside from medicinal plants, contained only caoutchouc trees, which, as far as his excellency knew, had only one value, that of rubbing out pencil marks" (Hamilton cited in Tambs 1966: 256-7). About half a century later, the 'bicycle craze' – fueled by John Dunlop's introduction of the pneumatic tire in 1888 (Prance and Prance 1993: 56) – and the emerging automobile and plane industries with their seemingly insatiable demand for rubber would teach her excellency otherwise.

[131] In addition to their functional centers, which served as transshipment points, the *barracas* consisted of forest-based rubber posts (*puestos gomeros*) or rubber centers (*centros gomeros*). On large *barracas*, the remotest centers entailed overland transport of up to one hundred kilometers through forest and swamp (Leutenegger 1940: 179). The majority of rubber tappers lived here in rude shanties in the absence of basic facilities.

[132] The term 'debt-peonage system' prevails in the literature when characterizing tapper-trader or tapper-patron relations. Personally, I refrain from using it generally for reasons that are well described by Weinstein (1983: 23): "The visitors who so roundly condemned this system performed a valuable service by calling public attention to the worst abuses of the debtor-creditor relationship. Yet by simply characterizing the seringueiros as debt-peons, such observations worked to obscure the complex character of the relationship between the tapper and trader. Debt, in fact, rarely served as a means of 'enserfment.' For the most part, the tapper was much too mobile and too far removed from the patrão's control for his debts to operate as an effective means of restraint. Legal prosecution for debt evasion was virtually unknown, and violent retaliation was often difficult to implement, especially since rival seringalistas did not hesitate to offer protection to fugitive tappers."

[133] Unreliability of labor was indeed a major problem: "The difficulty first encountered was the scarcity of hands, the Indians being very uncertain and unsteady—so much so that without giving any notice they would leave and float up or down the river on logs before their contract was at an end. The only way to keep them was to allow them to run in debt at the company's storehouse and to keep a guard who would watch and prevent their running away" (De Rivière 1900: 433). Similarly, Fawcett (1910: 521) holds that Indian and Mestizo laborers "are unreliable, difficult to please, lazy, and desert without notice. Usually they are unobtainable at any price." Moreover, it was the sheer numbers of laborers needed that could not be met by recruitment of native labor alone.

[134] Ugalde is described as "a talented young artist", who as early as 1852 sought to explore the Madre de Dios River – called Amaru-mayu in Quechua and Manutata by people native to the region (Chávez 1923: 8) – in search of the rubber riches (Markham 1883: 318).

[135] Ballivián implicitly refers to Brazilian arrobas by stating that one arroba is equivalent to 32 *libras* (1896a: 6); 32 Bolivian pounds of 460.1 g each amount to 14.72 kg, a weight virtually identical to that of the 'official'

The Madeira River became the center of strategic interests for both Bolivia and Brazil, though formally the Acre territory was controlled by Bolivia alone. Since the 1870s, Brazilian rubber tappers (*seringueiros*) had been advancing upstream the Madeira, Purus, and Juruá Rivers, penetrating into Bolivian territory, while the Bolivian counterdrive downriver from Santa Cruz via the Mamoré met with resistance on the upper Madeira (Tambs 1966: 259). Trade on the Madeira entailed entrepreneurs from Santa Cruz whereas river traffic was virtually monopolized by boatmen (*fleteros*) from the Beni towns (Block 1994: 163).[136] The situation changed with the 1867 "Treaty of Amity, Limits, Navigation, Commerce and Extradition" between Brazil and Bolivia (Ganzert 1934: 431-2). Through this agreement, called the Treaty of Ayacucho or the Lopes-Netto-Muñoz convention, Bolivia lost a considerable portion of its Amazonian territory, in particular in the upper Purus and Madeira valleys.[137] Consequently, Bolivians relocated their *barracas* from the banks of the Madeira River to the lower Mamoré (Fifer 1970: 119).

Throughout the 1870s, there were no more than two core regions of rubber production in Bolivia: the one on the lower Mamoré and Iténez Rivers and the other at the middle reaches of the Beni, both of which combined accommodated less than 200 rubber workers (Fifer 1970: 115-9). The Beni region produced not more than 26 tons of crude rubber in 1878 (Tambs 1966: 262-3).[138] It was not until 1880 that Bolivian rubber production embarked on a large scale (Ormachea and Fernández 1989: 7), in particular because a viable outlet to the Amazon had yet to be discovered. Typically, penetration of the Amazonian rubber rivers was an upstream movement, an endeavor hampered by the 18 Madeira-Mamoré cataracts (Fifer 1970: 115); downstream penetration from the Andean foothills failed as the waterways were

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Brazilian arroba (14.69 kg) (cf. Cortés and Ramírez 1998: 17). In contrast, a Bolivian arroba constitutes 25 *libras*, equivalent to

[136] Due to the eighteen cataracts on the upper Madeira, steam boats from Belém – first introduced on the Amazon in 1850 (Barlow 1978: 16) – reached only to San Antonio. Here the freight had to be unloaded from the rowing boats that came all the way from the upper Beni, Mamoré and other rivers. This three-week downward journey required a nine-week return trip (Fifer 1970: 130). This voyage was so perilous – on the lower Beni 25% of the boat crews were said to perish annually of accidents and fever (Fawcett (1910: 518) – that the enormous sum of Bs.300-400 per trip was paid to each crew member (Sanabria 1988: 100). Earlier, that is in the heyday of *quina* trade, oarsmen had to be hired for a whole year, as steam boats plied only between Belém and Villa de Serpa, close to the confluence of the Solimoês and Rio Negro Rivers; in those years, people needed to travel three months downstream and five months upstream when seeking to market Bolivian forest products (Ballivián 1896a: 4). The whole return trip from Belém to the rubber fields in Beni entailed 270 days, or the equivalent of 13 return voyages from Belém to New York (Barham and Coomes 1996: 42).

[137] Brazil gained around 300,000 km², about 250,000 of which in the upper Amazon (Tambs 1966: 259), including the rights claimed by Bolivia in the basin of the Ucayali north of the 11th parallel of south latitude (Ganzert 1934: 442). Bolivia ceded additional territory to Brazil on the right bank of the Paraguay River (De Mesa *et al.* 1997: 398). In return, Bolivia gained clear title on five river ports on the Paraguay River, free navigation through Brazil to the Atlantic, exclusive navigation on the Madeira River above San Antonio, and use of any road around the Madeira falls (Tambs 1966: 260). However, free navigation conceded by Brazil was limited to six years after the ratification of the contract (Paz 1999: 119).

[138] Low rubber production was partly due to limited access to the rubber resources and the lack of a viable outlet but also to a low of rubber prices; in those years, barely $b8 (roughly US$2) were paid for one Portuguese *arroba* of rubber (Coímbra 1993: 86), equivalent to 14.69 kg (Cortés and Ramírez 1998: 17).

hardly explored.[139] As late as the 1870s, some were still uncertain whether the Beni drains via the Mamoré-Madeira or the Purus into the Amazon (Fifer 1970: 119).[140]

In the early years of exploitation, rubber was transported the long circuitous route upstream the Beni to Puerto Salinas, whence it was carted overland via Reyes to the Yacuma River; thence it was rafted downstream, via the Mamoré River into Brazil (Fifer 1970: 120).[141] This changed with opening a new outlet to the Atlantic Ocean, discovered in 1880 by Edwin R. Heath, a North American doctor. In his historical journey[142] down the Beni River he established that the two core areas of rubber production were actually connected by proving that the Beni is directly linked to the Mamoré-Madeira river system. The only obstacle encountered on the trip were some rapids at a site which instantaneously was named Cachuela Esperanza.[143] Nicolás Suárez[144], a 30-year-old man from Santa Cruz, foresaw the strategic importance of this location, recognizing that virtually all rubber produced in northern Bolivia had to pass here on its way to the overseas markets. In 1881, he cleared the site to establish a trading post which was to become "the nerve-centre of the greatest economic empire lowland Bolivia has ever known" (Fifer 1970: 126).[145] Following the discovery of the new outlet, the

[139] Lacking knowledge on the Bolivian north spurred the fantasy of some adventurers: "As would naturally be expected, the streams flowing from the Andes are full of gold. ... the blue clay slates, associated with gold, extend to the river Beni. ... Gold is far from being the most valuable branch of their varied sources of wealth. This is the region of the chinchona bark richest in quinine, of the finest coffee and cacao in the world, of many kinds of rare and valuable cabinet woods, and of inexhaustible supplies of indiarubber" (Markham 1883: 313).

[140] Earlier descriptions of the Beni's course had been forgotten: as early as 1835 it was known that the "Beni ... skirts the province of Moxos, leaving it to the east, and pursues its course till it unites with the Mamoré, and loses its name" (Herrara 1835: 99). In 1826, the British Consul in Lima, C.M. Ricketts, "had already noted that 'it is asserted that the Beni is tributary to a still more abundant river called Mamoré'" (Ricketts, cited in Fifer 1970: 120), a fact confirmed by the 1827 mission to Bolivia that was headed by Pendtland (Fifer 1970: 119). In 1854, it was correctly held that "the river Beni flows in an easterly direction into the Madeira", whereas it was wrongly assumed that the Madre de Dios is "the same as the Purus" (Gibbon 1854: 52).

[141] This was "a hopelessly time-consuming and roundabout journey of nearly seven hundred miles" (Fifer 1972: 110). In contrast, the rubber from northern Santa Cruz Department was directly exported to Brazil via the Iténez River (Ardaya 1995: 55).

[142] The endeavor had previously been attempted by Ivon, Heath's brother, and the American naturalist James Orton in 1876-7 (Fifer 1972: 111). Edwin Heath's voyage was sponsored by Dr. Antonio Vaca Díez, a young *cruceño* who had arrived at Reyes in 1876; unlike many others from Santa Cruz, he had formerly not traded in Peruvian bark (Fifer 1970: 122). Among the first to establish *barracas* along the middle Beni, Vaca Díez had almost reached to the mouth of the Biata River when Heath set off to open up the rubber forests on the lower Beni (cf. Fifer 1970: 122).

[143] Heath was the first to explore the whole course of the Beni River (Markham 1883: 323), but he cannot claim the discovery of the fall at Cachuela Esperanza, the Beni's "only rock barrier to interrupt navigation completely anywhere between the Andes and its confluence with the Mamoré" (Fifer 1970: 125). The rapids were first approached upstream from the Mamoré River by José Augustín Palacios in 1846 (Markham 1883: 323, Abecia 1985: 151-2) and downstream the Madre de Dios River by Faustino Maldonado in 1861 (Markham 1883: 319, Fifer 1970: 121). As far back as the fifteenth century, the Inca Yupanqui had explored the whole course of the Madre de Dios (Markham 1883: 319), thereby reaching at least to its confluence with the Beni where – more than four hundred years later – Riberalta would be founded. Cachuela Esperanza literally translates into 'Fall of Hope'. Reportedly, Ildefonso Roca, the pilot of Heath's expedition, was so delighted upon reaching this point that he suggested spontaneously the name 'Esperanza' (hope), as now he believed that there was hope to survive the risky undertaking (cf. Heath 1883, Markham 1883: 326, Chávez 1923: 34). A mistaken version of the naming goes that one of the passengers had *no* hope that the cataract could be traversed and hence thought that the trip was over (see Letellier 1964: 28).

[144] Still being adolescent, Nicolás Suárez had been attracted to Reyes by the *quina* boom (De Mesa *et al.* 1997: 482). As the market for Peruvian bark declined, he was among the first bark traders who turned to rubber.

[145] Things would have drastically changed had plans be realized that sought to link the Madre de Dios and Purus Rivers through a railway between the former and the Acre River, as suggested to the Bolivian government by Father Armentia and the rubber baron Antenor Vásquez in 1885 (Ballivián 1890b: 27)

number of rubber workers along the Beni increased from around two hundred[146] to an estimated one or two thousand (Fifer 1970: 124), and rubber prices rose from five to eight *pesos* (roughly US$2) per arroba as a consequence of reduced transport costs (Heath 1882: 6).[147] Between 1881 and 1884, former *quina* workers quickly set up new *barracas* as strategic points in the lower Beni, Madre de Dios and Orton districts (Fifer 1972: 111).
While Bolivia would reach the peak in rubber trade not before the early 20th century (see Section 0), the rubber boom in Brazil commenced in the late 1870s (Weinstein 1983: 69). Similar to the case of Peruvian bark, it was the British who foresaw the importance rubber would gain in the industrializing world. In 1872, Henry Wickham who was already experienced in smuggling plant material from South America to serve the English Crown's interests was commissioned by the director of the Royal Botanic Gardens at Kew to organize the clandestine export of rubber seeds (Prance and Prance 1993: 57).[148] Camouflaged as orchid seeds[149], the small but precious freight made its way through the Brazilian customs and reached to England (Souza 1983: 62). Only some 2,700 out of more than 70,000 seeds gathered in 1876 germinated at Kew whence the seedlings were shipped to Sri Lanka (then Ceylon) and to the Malay Peninsular via Singapore (IRRDB 2000).[150] Soon after, an ambitious plantation program was launched throughout tropical Asia, as a result of which Asian production would first outstrip Amazonian production in 1913 (Santos 1980: 234).

Rubber concessions had first been granted by the Bolivian government in 1878 (De Mesa *et al.* 1997: 483). This, however, had a limited effect, for the rubber forests were seized in a first-come-first-serve fashion.[151] The most agile and efficient entrepreneurs thus would turn into 'rubber barons' in the years to come, but independent rubber tappers – most of them natives – and a good number of small patrons could retain their position for a while. In the early 1880s, it was not justified to talk of 'rubber barons', as no enterprise had been established long enough or grown sufficiently (Fifer 1970: 127). A list of *barraca* owners in 1880, elaborated during Heath's exploration, does not provide evidence for early concentration processes in Bolivia's rubber industry (see Heath 1882: 9-10), and even among the patrons natives could be found (see Ballivián 1896b: 41). On the other hand, our knowledge of independent tappers in those years is very scarce except for their tapping

[146] During his exploration, Heath (1882: 9-10) had noted 644 people on the Beni *barracas*, accounting for 4162 arroba of rubber in 1880. As Heath's figures seem to include people other than rubber tappers, they do not necessarily contradict those of Fifer.
[147] Yet the real price hike occurred in 1882 when rubber prices averaged US$2.3 per kg (Tambs 1966: 264). Interestingly, Heath associated his discovery not only with the future perspectives of rubber exploitation but also with those for *quina* export, arguing that it would take only 100 days to transport Peruvian bark from the Yungas of La Paz via the Beni River to the European markets (Heath 1882: 8).
[148] Though clandestine, the export was not illegal as no law existed forbidding the export of these seeds from Brazil (Fifer 1972: 137). It is also had held that contrary to popular belief Wickham had obtained clearance for his cargo (Prance and Prance 1993: 57).
[149] There are various accounts on how the rubber seeds made their way out of Brazil, one of which goes that a local Brazilian officer was explained "that 'they were bringing home delicate botanical plants for His Majesty's gardens at Kew'" (IRRDB 2000). So it is up to the reader to determine whether the seeds were stolen as claimed by numerous scholars and institutions, or "removed in an official way" (IRRDB 2000).
[150] It is a little known episode of the rubber boom that in an ironic twist of history, Henry Wickham had a Bolivian rival named Ricardo Chávez. Before Wickham's successful "rubber snatch" of 1876, Chávez had unsuccessfully shipped seeds to London from his base on the Madeira River (Dean 1987: 16).
[151] "The early arrivals seized huge territories. Particularly desirable were the lands that lay at the meeting of Brazilian and Bolivian territory, defined by the Madeira and its tributaries flowing in from the south – the Abuná, the Beni, the Mamoré and the Guaporé. The valleys of these drainages and their interconnections with the headwaters of the Purus and the Juruá included the richest *hevea* forests in the whole Amazon basin" (Hecht and Cockburn 1989: 64).

techniques: "Gum trees (caoutchouc) were abundant and were wantonly cut down by the Indians and settlers, who knew not how to extract the gum without killing the tree" (De Rivière 1900: 432). The tappers were believed not to know that "the smoking must be done within two or three days after the collecting or the juice granulates" (ibid.: 433). Yet news on smoking techniques spread rapidly and steps were taken to diminish indiscriminate tapping. It took only a few years until "the cutting down of the trees was strictly prohibited, and all along the Mapiri river and the Beni the Indians began tapping the trees and selling the gum in Sorata" (De Rivière 1900: 432).[152] Refinement of tapping techniques further extended to the tapping cycles, as the prevailing pattern was to tap a given tree for two years before it was allowed to rest for another two years (Von Vacano and Mattis 1906: 79).[153]

Independent rubber tappers were not to dominate the scene for long. In the Caupolicán area, big *hacienda* owners abandoned their stands of *Cinchona calisaya* and directed the labor to rubber exploitation (De Rivière 1900: 433). Within a few years' time, these and other patrons managed to establish a network of *barracas*, *de facto* occupying all lucrative sites along the 'rubber rivers'.[154] It was soon known which rivers enclosed the most valuable rubber forests and thus the Orton River attracted most of the interest (see Ballivián 1890b: 29).[155] During his 1880 journey, Heath had claimed this river for his friend Dr. Antonio Vaca Díez (Fifer 1970: 123). The 'father of the rubber industry' (Chávez 1923: 36; my trans.), as Vaca Díez was called, along with the Suárez Brothers would acquire the bulk of the *barracas* although smaller patrons succeeded in retaining a certain share.[156] Nicolás Suárez engaged in the rubber economy immediately after having secured Cachuela Esperanza for the *Casa Suárez*, but initially he was concerned with purchasing rubber and selling merchandises and foodstuffs rather than with buying *barracas* (Chávez 1923: 52). His chief interest was to establish a number of supply posts at key portage points between the Madre de Dios, Orton, Tahuamanu and Acre Rivers to expand his role as a general trader (Fifer 1970: 126). This way he acquired invaluable knowledge on the essential details of output and credit-reliability on his and other *barracas* (ibid.: 128).[157]

It was precisely the role of credit – indispensable to secure labor on the *barracas* and supply these with basic infrastructure – that was to play a key role throughout the history of Bolivia's rubber industry. While *Suárez Hermanos* could rely on capital accruing from their cattle

[152] The passage from Sorata, situated in the Bolivian Highlands near Lake Titicaca, to the east is described as "a miserable mule path, traced in the most stupid and erratic way; but even that route only went as far as ... Mapiri on the Mapiri River" (De Rivière 1892: 206). During the rubber boom and its aftermath, North American companies channeled a smaller portion of Bolivian rubber via this route to the Pacific (Fifer 1970: 143).

[153] Others worked the trees for six years but the ensuing period of six idle years was usually not sufficient to completely restore the trees' productivity (ibid.).

[154] The number of rubber estates on the Madre de Dios River increased from nil in 1882, via seven in 1883 (Armentia 1883: 117), to twelve "*barracas* in prosperity" in 1884 (Ballivián 1890b: 28). On the Beni River, there were less than ten *barracas* in 1880, rising to thirty-six in 1883 (see Armentia 1883: 116-7). In that year, little less than 600 rubber tappers, accompanied by about 200 women and children, produced 7770 arrobas of rubber (around 90,000 kg) on the Beni and Madre de Dios *barracas* combined (ibid.: 122-3).

[155] Quite a few rubber stands were opened but soon abandoned, in part because of low returns to investment but at times in response to attacks of hostile Indians (see Heath 1882, Ballivián 1896b).

[156] The sixty-six *barracas* existing in 1894 were owned by around forty patrons, accommodating 2534 tappers (*picadores*) who extracted 72,460 arrobas (833,290 kg) of rubber from 8936 rubber trails (Ballivián 1896a: xiii).

[157] One of his main concerns was the careful positioning and maintenance of cart tracks through the forest to link the rubber centers efficiently: "Certainly no other Bolivian either during or since that period has ever developed the co-ordinated network of land and river transportation demanded by Nicolás, and provided for his competitors—at a price" (Fifer 1970: 128).

ranches and provision business[158], Vaca Díez and other patrons faced a more serious shortage of liquidity. Capital was increasingly sought from trading firms in Santa Cruz, if not from abroad[159], and those lacking access to credit or being unable to refund former loans were doomed to abandon their properties: "Scattered properties began to be amalgamated and fortunes consolidated as *barracas* changed hands in default of accumulated debts" (Fifer 1970: 127). As a result, a four-tiered structure of people involved in rubber production emerged by the mid-1890s. From top to the bottom it presented as follows (cf. Ballivián 1896a: 32-3, Umlauft 1898: 487, Sanabria 1988: 99):

large rubber houses (e.g., Suárez, Vaca Díez, Roca, Salvatierra, Vásquez)[160], with a varying number of *barracas* at their disposal; these houses performed the same function as the *casas aviadores* in Brazil, that is advancing the rubber producers in cash and kind (*habilitación*) in return for the latter's obligation to deliver a given volume of rubber

small patrons, possessing own *barracas* and personnel but lacking the capital to finance their operations; they relied on the *habilitación* provided by the large rubber houses;

contractors (*fregueces*), having own personnel at their disposal but lacking both land and capital for independent rubber production; this group – the most numerous one –comprised the tenants of other people's *barracas*, who had their laborers work under a system granting exclusive rights to the *barraca* owners with regard to the purchase of rubber and the sale of merchandise

dependent tappers and laborers (*asalariados* or *mozos*), working under a patron on a fixed-wage basis (*sueldo fijo*).

The latter point deserves special attention, as the prevalent image of conditions exploitative of the rubber tappers roots largely in their alleged reimbursement on a piecework basis.[161] It is commonly held that this arrangement transferred the risk of illness and adverse weather to the tappers, who reputedly received only nominal prices for the rubber delivered. Fixed-wage tapping was even more remarkable given that "wage labor was not widely used during the Rubber Boom because it would have been very costly to monitor the efforts of widely scattered tappers and to ensure full delivery of tapped rubber in areas where itinerant traders tempted tappers with cash or goods in exchange" (Coomes and Barham 1994: 246).[162] Apparently, such difficulties were not paramount on the *barracas* and the fact that Bolivian

[158] The Suárez Brothers owned 250,000 head of cattle, a sugar-mill producing 115 metric tons of sugar annually, a power plant, and an ice plant (Melby 1942: 460).

[159] Though British, French and North American capital dominated the early rubber trade, Swiss and German ventures gained importance during the boom proper. Many trading firms (*casas comerciales*) were based in Santa Cruz, operating with branches in Trinidad, Guayaramerín, Riberalta, among other places (see Ardaya 1995: 58). For the involvement of German money lenders in Bolivia's rubber industry, see Bieber (1984: 40-4), Salas (1990: 8), and Ardaya (1995: 58).

[160] Vásquez occupied the site where, in 1894, Riberalta would be founded and thence controlled the lower Madre de Dios; the upper Madre de Dios was soon seized by Angel Roca, Salvatierra and some smaller patrons; Vaca Díez first established further *barracas* on the lower Beni River in addition to the ones he had on its middle reaches, before he reclaimed the rubber forests along the Orton River (see Ballivián 1896a: iv-xii, Fifer 1970: 126). In response, Nicolás Suárez sought to accumulate his holdings by focusing on the Tahuamanu – one of the two headstreams of the Orton River – and the upper Acre River, on which he controlled *barracas* on a stretch of about 100 miles below Cobija (Fifer 1970: 130).

[161] It seems that this picture largely derives from rubber estates in Brazil where rubber tappers indeed received piece-rate wages (see Ule 1905: 36).

[162] The same authors qualify this generalization by stating that the "precise specification of labour arrangements in each region awaits closer empirical study" (Barham and Coomes 1994a: 56).

tappers chiefly received fixed wages[163] in the early rubber era (see Umlauft 1898: 484, Ballivián 1896a: 33, Sanabria 1988: 99, Pacheco 1991: 7, 1992: 237-45) ensured their services to the patrons also outside the rubber season (see Ule 1905: 26). Interestingly, the contracts with the patrons included a passage on the tappers' monthly salary without stipulating a minimum amount of rubber to be tapped; in addition the tappers were guaranteed "subsistence usual in the region, attendance and medicines free, in case of sickness, and if this should last more than fifteen days, the salary will cease, ..." (Fifer 1970: 140).[164] Fixed wages were paid to all permanent staff on the *barracas* and only the temporarily hired laborers were reimbursed on a piecework basis (Von Vacano and Mattis 1906: 79). These were at least the conditions on the Suárez *barracas*, whereas other rubber houses might have preferred piece-rate arrangements[165], or even held their laborers in slave-like conditions including corporal punishment (see ibid.: 81, Leutenegger 1940: 223).

Along with the concentration of land holdings in the hands of a few rubber barons, the rubber frontier was pushed further upstream into areas devoid of human settlement. The need for labor on the *barracas* rose accordingly and could no longer be met from the native population alone. Thousands of laborers were consequently recruited from Santa Cruz, the Yungas, and the valleys around Cochabamba (Sanabria 1988: 94, Zeitum 1991: 83).[166] In addition, the Moxos towns provided an essential source of acclimated workers for the rubber trade on the Madeira River (Block 1994: 161) and, after 1881, for the estates on the lower reaches of the Beni, Mamoré and Iténez Rivers (Jones 1985: 12).[167] By the early 1880s, demand for labor had increased so dramatically that even women were brought in as laborers (Heath 1882: 8).[168] First attempts to recruit laborers from Japan failed (Von Vacano and Mattis 1906: 79), but later mobilization campaigns met with more success (see Tigner 1963).[169] Recruitment of labor can be viewed as the second movement of international capitalism into the Beni plains

[163] In the 1890s, patrons were obliged to pay Bs.10 (roughly US$5) as a monthly wage, in addition to board and lodgings and free medical treatment (Umlauft 1898: 484).

[164] In a contract made between C.M. Barbery and the *Suárez Hermanos*, indigenous laborers were granted a sick leave of up to one month without losing their wage, while medicaments and alimentation was free for a period of up to three months (see Pacheco 1992: 237).

[165] The House of Braillard, for example, paid piecework quota to the tappers but provided free staples such as plantain, manioc, rice and maize from the agricultural plots on its *barracas* (see Pacheco 1992: 247).

[166] According to police records and contemporary estimates, no less than 80,000 persons – including women and whole families – left Santa Cruz and its surrounding provinces between 1860 and 1910 in search of the 'black gold' (Sanabria (1988: 94). However, this figure seems grossly exaggerated given that the whole population of Santa Cruz Department did not exceed 200,000 in those years (ibid.). Exaggeration may be due partly to Heath's statement that more than 100,000 laborers were needed to work rubber in Bolivia's north (Edwin Heath, cited in Armentia 1883: 115). In fact, there were no more than 6000 rubber tappers in northern Bolivia in the late 19th century (Ballivián 1896a: 1), of whom around 3000 were provisioned by the House of Braillard alone (Roux 1995: 138). The official census of 1900 yielded a total population of 6883 in the *Territorio Nacional de Colonias* (Schurz 1925: 216).

[167] Guayaramerín, situated on the Mamoré River only fifty kilometers away from Cachuela Esperanza, owed its initial growth as a river port largely to the traffic of immigrants to the rubber region (Fifer 1970: 127).

[168] Generally, however, women did not tap rubber themselves but accompanied their husbands to look after family cooking, the children, the collection of fuelwood, forest foods and the like. A very similar pattern existed on the Argentinean sugarcane plantations to which Indian laborers from southeast Bolivia seasonally migrated in the late 19th century (Langer 1989: 143).

[169] On the Suárez *barracas*, for example, as many as 300 to 350 Japanese laborers were employed at one time, and other landowners also used them; as remuneration decreased in the rubber forests, many settled in the towns, including about 300 in Riberalta (Schurz 1925: 218).

(Block 1994: 161), ensuing the first penetration through the trade in Peruvian bark.[170] What had embarked as mercantilist form of NTFP extraction during the *quina* era would shift to a mode of resource and labor exploitation governed by primitive capitalism[171]: "Since the advent of capitalist accumulation, migration has been a crucial mechanism for bringing scarce labor to regions where capital investment could yield high profits" (Barraclough 1991: 137). As a consequence of such migration in Bolivia, the tappers' resident communities became depopulated, impoverished, and disarticulated (see Von Vacano and Mattis 1906: 93-9, Fifer 1970: 138-41, CIDOB 1979a: 3). On the other hand, the increasing number of laborers on the *barracas* needed to be fed basically from outside the region, bringing about unprecedented prosperity for the agricultural sector and related industries in the Santa Cruz Department (Sanabria 1988: 130, Ardaya 1995: 46-8).[172]

Unlike Brazil where the state promoted the mobilization of migrants throughout the national territory (Becker 1995: 65), it was Bolivia's private sector that launched labor mobilization campaigns for the rubber estates. Persons like Oliva, Moreno and Chávez provided those willing to migrate with credits for the journey and their initial setting up (Sanabria 1988: 95). In Santa Cruz, recruitment of prospective tappers took place in special houses (*casas de alistamiento* or *casas de enganche*) by means of an enlistment system (*sistema de enganche*).[173] The laborers were paid an advance of Bs.200-800 (around US$100-400) before they departed from the Calle del Beni – the road "from where one leaves and does not come back" (Umlauft 1898: 483, Sanabria 1988: 95-6, Coímbra 1993: 16; my trans.).[174] In addition to the rubber houses of the aforementioned families, individual 'head hunters' (*reenganchadores particulares*) became involved in a form of increasingly forcible labor 'recruitment' (*caza de peones*).[175] They were not only reimbursed for the travel costs[176]

[170] Along with the capital people came from all over the world; it was by no means unusual that, in addition to the indigenous and mestizo population, there were Europeans, Brazilians, and Asians on the *barracas* (Von Vacano and Mattis 1906: 65-6).

[171] Pacheco (1992: 222) attributes the primitive capitalism as manifest in Bolivia's early rubber economy to the latter's inability to intensify the production system by means of rubber plantations; he associates this failure with the physical conditions in the forest and the regional economy's dependence on the European financial system.

[172] This prosperity would be ephemeral, as the *cruceño* products were soon replaced by cheaper imports of rice from China, sugar from Cuba, and liquor and coffee from Brazil (Sanabria 1988: 131). This was due largely to the dearth of road connections in Beni. As a result, Bolivian products suffered from high transaction costs, rendering their sale in Beni prohibitive, notwithstanding that foreign products were subject to excessive costs of river transport (Bs.10 per arroba) on the Madeira (Guzmán 1905: 10). The decline of agricultural production – aggravated by opening the Madera-Mamoré railway in 1912 – and the resulting unemployment in Santa Cruz were mitigated by a renewed flow of *cruceño* migrants to Beni and Pando (Ardaya 1995: 49-50).

[173] A virtually identical system existed in southern Bolivia for the recruitment of migrant laborers for Argentinean sugarcane plantations (see Langer 1989: 143-4).

[174] The *enganchadores* were supposed to leave Bs.500 – or Bs.200, according to Umlauft (1898: 484) – as a deposit for each Indian recruit to ensure his return, but most recruiters swindled or took the workers by armed force, as reported from the Chaco region from where native *Chiriguanos* were recruited (Langer 1989: 145). The amount of advance payment compares to annual production figures in the rubber zone: an average rubber tapper produced some 60 arrobas (690 kg) of rubber annually; these were bought by the patron from the self-employed tapper (*freguez*) at Bs.8/@ and sold at Bs.25/@ to a Riberalta-based intermediary (Umlauft 1898: 487-8), translating in annual gross incomes of semi-independent tappers and patrons of Bs.480 and Bs.1500, respectively. In contrast, a dependent tapper on a monthly-wage basis (*mozo*) received only Bs.10 per month, that is Bs.120 per year, in addition to free provision of foodstuffs and medical care (Umlauft 1898: 484-7).

[175] What began as free labor enlistment turned into a system of armed force within a few years' time (Coímbra 1993: 31). Similarly, what had begun as purely voluntary association in Brazil's extractive economy transformed into a coercive relationship, as slaving expeditions were initiated in the major areas of Indian settlement in the Brazilian Amazon in order to assure an adequate labor force (Weinstein 1983: 11-3).

incurred but received a per capita premium of up to Bs.400-500 (roughly US$200-250) upon delivery of the worker to a *barraca* owner (Umlauft 1898: 485, Sanabria 1988: 97).[177] Likewise, in the towns of Moxos it was independent intermediaries rather than the operators themselves who recruited and enlisted workers on the strength of cash advances and promises of quick riches (Block 1994: 170). There were, however, also rubber tappers working on their own account (*cuenta propia*) who traveled to the rubber forests independent of an intermediary (see Ule 1905: 26).

Upon their arrival to the rubber forests, the newcomers did not encounter rubber stands at their free disposal. Instead, the tappers were assigned to the patrons or administrators of the rubber estates. These *barracas* had been installed by the first to arrive, or by others entrusted to do so on behalf of certain firms or individuals. Thus a few influential families – among them Vázquez, Salvatierra, Vaca Díez, Braillard and Clausen[178] (later *Seiler & Cía.*) and Suárez – consolidated their control of the *barracas* during the 1880s. Antonio Vaca Díez, commonly referred to as the 'King of the Beni' because of the dominant nature of his personality (Rusby 1933: 309), gained an early lead through his domination of the Orton rubber trade, an area reputed for its rubber riches. But Nicolás Suárez and his brothers[179] were the first to establish direct ties with the European markets, founding *Suárez Hermanos & Co.* in London in 1890 (Fifer 1970: 128). They strengthened their dominance by establishing commercial branches in San Antonio, Manaus and Pará, and securing beef supplies for their *barracas* from own cattle ranches near Trinidad (Fifer 1970: 129).[180] The *Casa Suárez* thus qualified as an early and rather unique example of vertical integration in the extractive economy (Weinstein 1983: 21).

The main competitor of the Suárez Brothers had been Antonio Vaca Díez. By the early 1890s, he was seriously undercapitalized and, following the Suárez example, sought finance in Europe (Bieber 1984: 41). Backed by British and French investors, his *Orton (Bolivia) Rubber Company* came into existence in February 1897 (Fifer 1970: 132).[181] In an effort to establish a strategic alliance with Fitscarrald – a Peruvian explorer and rubber patron controlling the Ucayali and upper Madre de Dios Rivers (Barham and Coomes 1996: 64, 132) – he was about to extend his sphere of influence toward the Urubamba-Ucayali waterways, when both met a sudden death as their small steam launch capsized on the Urubamba in July 1897 (Fifer 1970: 130-3). Following the premature loss of Vaca Díez, the *Orton Rubber*

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[176] In those years, travel from Riberalta or Villa Bella to the interior of Bolivia was even more expensive than a trip from less remote places in Bolivia to Europe, explaining the high amount paid as *habilito* (Umlauft 1898: 483).

[177] A labor broker was advanced a minimum of Bs.10,000 to start his recruiting business (Umlauft 1898: 483).

[178] The House of Braillard had moved from Peru to Reyes during the heyday of the Peruvian bark trade, and subsequently descended the Beni River shortly after Heath's exploration in 1880 (Fifer 1972: 152). Federico Bodo Clausen was made the French firm's representative, on behalf of which he founded, along with Máximo Henicke, Riberalta – first named Ribera Alta because of its high embankment – on 3 May 1884 (Centeno and Fernández 1998: 31). The official foundation, however, is recognized for 3 February 1894.

[179] Nicolás, though later the unquestioned leader of the *Casa Suárez*, was but one among seven gifted brothers (Melby 1942: 459-60). In fact, it was Rómulo and Gregorio Suárez who first plunged into northern Bolivia to trade hides, skins, rubber and other forest products for supplies in the region of the lower Mamoré (Fifer 1970: 125). It was the performance of the six brothers as a team, tied by family loyalty and driven by Nicolás' ambitions and abilities, that explained the extraordinary spread of their influence (ibid.: 130).

[180] To bring in the foodstuffs from outside was key to Suárez' success. Prices for preserves in Riberalta, for example, were ten times those outside the region (Fawcett 1910: 518). In addition to rubber and cattle, the *Casa Suárez* traded in skins, sugar, and liquor (Pacheco 1992: 222).

[181] The Company was registered in London, where the records listed 4278 rubber trails as its property, viz. 2878 on the Orton River, 900 on the Tahuamanu, and 500 on the lower Beni (ibid.).

Company ran into debts and, after a while, "passed in its entirety to *Casa Suárez* which was in any case both the major competitor and the chief creditor" (ibid.: 133). Thus the Suárez Brothers acquired the rubber forests along the Orton River, a stretch desperately needed to complete their supremacy. By the late 1890s, the Suárez Brothers had formed an empire on their own, just in time before rubber exploitation was to enter its boom years.

As rubber production expanded, rumors spread about the abuse and coercion resulting from the enlistment system. It became evident that natives were taken against their will, with the perpetrator often being a government official (Block 1994: 170). In 1896, the state interfered and passed Enlistment Laws (*Leyes de Enganche*) (Sanabria 1988: 97). However, the laws were to suffer the same fate as many to follow: they were respected but not fulfilled (ibid.). Though quite a few estate owners earned a bad reputation in those days, there was also a number of benevolent patrons, as became apparent during a thorough inspection of the *barracas* along the Beni River at the eve of the rubber boom (see Ballivián 1896b: 36-45).[182] Yet the enlistment system persisted, providing the institutional basis for debtor-creditor relationships known as *habilito* in Spanish and *aviamento* in Portuguese: the rubber tappers received an advance in cash and/or kind in return for the future delivery of rubber.[183] The system could easily be manipulated by those who kept the accounts. Monetary transactions were limited or totally excluded, as suggested by evidence from Bolivia (Umlauft 1898: 490, Becerra 1984: 60f),[184] Peru (Serier 1993: 76), and Brazil (Santos 1980: 156, Torres and Martine 1991). The tappers' dependency was reinforced through the supplies to be purchased from the patrons on credit at grossly inflated prices (Hecht and Cockburn 1989: 62). It was the role of credit and debt, rather than control of the means of production, that defined social and economic relations (Stanfield 1998: 46).

Contrary to popular belief, the *habilito* was not imported from Brazil in the wake of the rubber boom. Rather, it merged the payment of advances as prevailing in the *quina* economy with more or less coercive labor regimes practiced elsewhere in Bolivia, such as the *pongueaje*[185] from the Bolivian highlands or the *temporalidades*, that is the compulsory production of certain products for the state. The latter system, carried over from the colonial

[182] The scarcity of labor made the rubber barons resort to various means to recruit labor, depending on their character and their conscience, and ranging from flattery to intimidation and piracy; the huge variety of behavior explains the discrepancy in the assessment of the Beni: according to one group of people it was a magic area of great endeavors and improvised fortunes, but according to others it was a region with creatures emanating from Dante's hell, an oriental slave bazaar, and, more generally, the land of contradictions (Umlauft 18989: 483).

[183] In fact, the rubber industry involved a whole chain of creditors and debtors from the large rubber houses to the rubber tapper. "The Aviamento system ... linked the direct producer, the *seringueiro* who lived on the upper rivers, via a series of intermediaries, to the finance houses, the *Casas Aviadores*, in the port cities Belém and Manaus. The *Casas Aviadores* borrowed from American and European merchant banks and advanced credit in the form of tools, subsistence goods, and cash to agents up river. These in their turn advanced credit to the estate owners, the *seringalistas*. The latter then provided the same 'service' for the last link in the chain, the *seringueiro*. Thus, as credit items flowed one way along the chain from Belém to Manaus westwards, so the rubber product flowed in the opposite direction" (Bakx 1988: 144-45).

[184] Coímbra, though, draws a somewhat different picture; according to him, coins did play a role in the transactions between the tappers and the patrons or traders, and though bank notes were generally scarce, those from Great Britain and France were better known than Bolivian bills (Coímbra 1993: 126-28). Similarly, it is reported that rubber workers demanded payment in local currency instead of the all-pervasive Pound Sterling, which then was the virtually exclusive currency both in the rubber region and Santa Cruz (Sanabria 1988: 130).

[185] Under the *pongueaje*, large landowners were allowed to extract free labor from the previously landowning Indians in return for use of usufruct soil on the newly-created highland estates; the system – reputedly the most exploitative Indian-*hacienda* system in 19th-century Latin America – encompassed both free labor and free personal service (Klein 1969: 8).

period, placed individuals or groups of laborers on piecework quotas and established delivery dates for turning over their products to administrators; remuneration came in the form of goods provided by the state (Block 1994: 169).[186] Though formerly abolished in the 1840s, the *temporalidades* persisted in the second half of the nineteenth century (ibid.: 169-70). The upcoming rubber boom required the system to be fit to the particular needs of the rubber economy. Now it was the private sector rather than the state who forced the laborers into indebtedness. Consequently, the system's underlying rationale changed from securing a constant flow of agricultural produce to securing a constant supply of labor for the procurement of rubber.

But the state did not cease to hold a stake in the rubber economy. As early as 1883, the Bolivian government had issued regulations to make prevail the rights of the state. Reinforced in 1895, the rules determined the *barracas* as entities of industrial rubber production; rubber trails (*estradas*) of 150 trees each were established as sub-entities, and the payment of royalties was based on the number of hectares claimed (Abecia 1985: 152).[187] In 1905, the rubber trails were included into the Law of Uncultivated Lands (*Ley de Tierras Baldías*), stipulating an annual concession fee of one *boliviano* (around US$0.6) per *estrada* over a period of 15 years or, alternatively, the outright payment of Bs.15 (around US$8.8) (Von Vacano and Mattis 1906: 47). Individuals and incorporated companies were entitled to work up to 500 and 1000 *estradas*, respectively; further stipulations encompassed printed conditions of employment, the condemnation of imprisonment and flogging, and the advocating of payment in cash and/or kind, as well as medical services (Fifer 972: 113). Moreover, prices where stipulated for those desiring to purchase land: land designated for agriculture and cattle ranching sold at Bs0.1 (about US$0.06) per hectare, while parcels with rubber trees sold at ten times that price (Von Vacano and Mattis 1906: 48). Those purchasing

[186] The *temporalidades* system had counterparts elsewhere in the Amazon. In Brazilian Amazonia it was tantamount to the Directorate system. Imposed by the Portuguese government on the Directorate Indians in the state of Pará, this 18th century forced-labor system implied, *inter alia*, the collection of forest products such as salsa or sarsaparilla (*Smilax* spp. and other *Liliaceae*), cravo (*Dicypellium caryophyllatum*), and Brazil nuts (Anderson 1999: 49). Even in the 19th century it continued, as the State of Pará compelled christianized Indians to serve as a member of Labor Corps (*Corpos de Trabalhadores*) (Herndon 1853: 252). These 'pseudo-military forced-labor brigades' comprised all non-white males who could nor prove substantial ownership of property or gainful employment; laborers were thus provided to both private enterprises and public works (Weinstein 1986: 59). The Spanish *mita* system was a variant of *corvée* labor, under which the Indians were allocated to state projects (Hecht and Cockburn 1989: 59). Such a tribute system, extracting money, goods, and labor from the native population, is for example reported from 19th-century Ecuadorian Amazonia (Stanfield 1998: 48). Under Spanish institutions such as the *encomienda* and the *repartimiento* some individuals got the right to draft Indian labor and to collect compulsory tribute and taxes (Stanfield 1998: 40). But as early as the late 18th century the Brazilian Directorate system underwent significant modifications. Under the rule of the Marquis of Pombal it sought to favor the native population rather than exploiting it. Pombal issued a decree, according to which the Indians were to be accorded all the privileges and rights of Brazilian citizens, freed from slavery, peonage, or church tutelage (Hecht and Cockburn 1989: 57). Pombal's Directorate required all who wanted to rent Indian labor to put up the entire Indian wage in advance: "Such mandatory deposits made it virtually impossible for any small settler to use native labor. The inevitable followed, in the form of a rapidly accelerating labor monopoly by those with capital resources, the large plantation owners and men with booming extractive business" (ibid.: 59). Though initiated with the best of intentions, the system, which would later evolve into the *aviamento* system, was ill-fated from its very beginnings.

[187] In an attempt to settle the sparsely populated tropical lowlands of Bolivia, a series of public-land laws had been passed between 1886 and 1890. Under the control of the newly created Office of Public Lands and Colonies, the sale of up to ten square leagues (250 km²) was permitted per person or company in areas that lay more than 60 kilometers beyond departmental capitals; in areas closer to these towns, a maximum of three 25-hectare plots could be sold to the same person (Langer 1989: 21).

land committed themselves to settle at least one family per every 1000 ha and the sale of parcels exceeding 20,000 ha had to be approved by the Congress (ibid.).

The new legislation reflected the increased value of rubber production, which had risen from 294 metric tons in 1890[188] to more than 3000 metric tons in the early 1900s (Abecia 1985: 152). Along with the rise of rubber production, fiscal entries of the Bolivian state increased considerably given that *ad valorem* duties of eight and, in the early 20th century, twelve percent were levied on rubber exports (Sanabria 1988: 129).[189] Unlike the trade in Peruvian bark in which mercantilist relations prevailed, the Bolivian state played a less active role in the rubber trade whose free commerce reflected a stage of primitive capitalism.

Bolivia's early rubber era can briefly be characterized as follows:

quina trade declines because of Inner-Andean and Asian competition

the expanding trade in rubber provides new sources of income and employment

the rubber economy strengthens the region's integration into the world economy, but Bolivian entrepreneurs – in particular *cruceños* – dominate the early trade

the rubber industry drastically alters the modes of production and the socio-political hierarchies: the *barraca* system emerges along with patron-client relationships

the native population is increasingly forced into these coercive systems

the Bolivian state interferes only marginally in the emerging rubber economy.

It was on the eve of the rubber boom that a boundary dispute and resulting hostilities set out between Bolivia and Brazil. The issue at stake were the rubber riches of Acre that were under Bolivian dominion by the close of the 19th century. The controversy had an important bearing on the future development of the northern Bolivian Amazon, warranting a closer look at the specific events between 1900 and 1903.

Insertion: the contest for Acre at the threshold of the 20th century

The rivalry between Bolivia and Brazil for control of the upper Amazon basin is a little-known side effect of 19th-century economic development in South America (Tambs 1996: 254). Largely neglected by the colonial powers, the Western Amazon attracted international attention only through the upcoming rubber boom. The prospects of turning rich overnight not only propelled the imagination of adventurers and businessmen but also the states' thirst for revenues from and military control over a hitherto forgotten region. The most notable controversy involved the conflict between Bolivia and Brazil over the Acre territory[190] (Melby 1942: 461), covering 188,031 km² (Souza 1983: 162) or almost double the size of northern Bolivia today. Until the mid-19th century, there was hardly any external interest in

[188] Low rubber exports in 1890 owed to an epidemic of smallpox (*viruela*) on the upper Madeira River near San Antonio; it left hundreds of boatmen and pilots dead and would have almost caused a standstill of Bolivian rubber trade had there not been notable reinforcements from Santa Cruz (Coímbra 1993: 122-3).

[189] Other sources talk of a fourteen-percent levy (Pearson 1911: 142, cited in Barham and Coomes 1996: 129). In Brazil, *ad valorem* taxes on rubber even averaged twenty percent (Melby 1942: 459).

[190] The territory was named after the Aquiri River, following a name of the *Ipurina* Indians that was mistaken as Acre by the Vicomte of Santo Elias (Souza 1983: 17).

an area believed to offer nothing but ferocious Indians and fever.[191] Acre's hidden treasure were the rubber trees, the finest and largest specimens known (Reintgen 1905: 111, Davis 1996: 354). As Pará's monopoly on the early rubber trade vanished – the adjacent stands of rubber tress had been destroyed by ruthless tapping – *seringueiros* from the Amazon estuary plunged ever deeper in the Amazon basin, and the year 1852 saw the first rubber estate (*seringal*) established on the Purus River (Tambs 1966: 258). With the rubber boom gaining momentum, first Brazilian incursions reached the Acre territory in 1860 (De Mesa *et al.* 1997: 483). By that time knowledge on the region was extremely scarce, since even the most daring explorers and researchers had bypassed the insalubrious region (Souza 1983: 54).

Historically, the 1494 Treaty of Tordesillas had brought the entire rubber-producing region of the Amazon within the domains of the Kingdom of Castile, but the Spaniards fought a losing battle against the steady westward push of the Luso-Brazilians (Tambs 1966: 254). A new boundary between Portuguese and Spanish Territory was stipulated in the 1777 Treaty of San Ildefonso, including an east-to-west line in the upper Amazon basin that was anchored on the Madeira River at a point equidistant from the Amazon and the mouth of the Mamoré River (see Ganzert 1934: 429, Fifer 1966: 363). The upper Purus and Madeira Valleys thus remained subject to the control of Bolivia even after its independence in 1825. By the mid-19th century, a Brazilian frontier post had been established at Roscenia de Crato[192], well downstream the Madeira (Gibbon 1854: 306), asserting Bolivia's sovereignty south of that location. The 1867 Treaty of Ayacucho confirmed Bolivia's claim to the Acre territory[193] – seven years before rubber interests first became significant in the region (Holdich 1916: 95). Article 2 of this agreement granted *uti possidetis* rights to the Brazilians.[194] While the Brazilian government relied on actual possession (*uti possidetis de facto*), the governments of Bolivia and Peru, and other Spanish-descended neighbors of Brazil, clung to the doctrine of *uti possidetis juris*, that is the boundaries established by the old treaties (Ganzert 1934: 430). Given this controversy and the fact that the treaty was based on incomplete knowledge of the region's geography, it was practically non-effective (Holdich 1916: 95).[195]

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[191] The Acre region, famous for the highest yielding rubber stands, was also the least healthy rubber area due to the prevalence of *beriberi*. The disease, caused by a deficiency of thiamine (vitamin B1), effectively decimated Acre's population by about a half (Roux 1995: 136).

[192] The trade post established here provided a market place for the native population from its surroundings and traders of various origin, exchanging sarsaparilla, Brazil nuts, chocolate, pitch, and guaraná for rum, hatchets, knives, fishhooks, beads and the like (Gibbon 1854: 307).

[193] The treaty stipulated that Brazil and Bolivia mutually respect actual possession (*uti possidetis de facto*) as a basis of their agreement. The starting point for the original east-to-west line of the 1777 treaty of San Ildefonso was carried to the junction of the Beni and Mamoré Rivers at 10° 20' south latitude. From there the frontier was to follow a parallel 'drawn from the left bank of the Madeira River in south latitude 10° 20' until it met the Javary River'. In addition, it was specified that—should the headwaters of the Javary prove to be north of the east-to-west line—the boundary should extend along a straight line drawn to the principal headwater of the Javary River. This was exactly the point at stake, as either side tried to establish the headwaters farther south or farther north, depending on the respective preference (Ganzert 1934: 432-4). For a full text of the treaty, see As Comissões Brasileiras Demarcadoras de Limites (2000a).

[194] The traditional formula '*uti possidetis, ita posideatis*', originating from Roman law, roughly translates into 'the way you possess it, you will go on possessing it', or, 'whoever has it, holds it', as Hecht and Cockburn (1989: 56) put it. In America, the principle of *uti possidetis* dates back to 1810 (Manning 1924: 298), giving *de facto* occupation of land priority to any legal titling system. The new nations emerging in South America during the nineteenth century adopted largely the demarcations made by the Viceroys, presidencies or captains general, i.e. largely those demarcations that were made under various monarchs, in particular Carlos III (Quesada cited in Abecia 1986a: 298).

[195] As the Bolivian endeavor to base its land claims on *uti possidetis juris*, that is the land controlled by the Spanish crown in 1810, lacked any juridical basis, it reflects a certain "geographic surrealism" (Paz 1999: 122).

A steady stream of Brazilians – many of whom escaping from drought-stricken Ceará – was pouring into the rubber-laden valleys of the upper Purus and its tributaries, such as the Acre and Hyuaco Rivers (Fifer 1966: 363).[196] By 1900, there were 60-70 thousand people[197] in Acre, nearly all Brazilians (Ganzert 1934: 434, Santos 1980: 203). In 1899, Acre supplied little less than half the rubber produced in the Amazon[198], underlining its strategic importance and appeal for further immigrants. In the Juruá and Purus Valleys, the Brazilians were joined by Peruvians who had entered that region since 1896, following the destruction of the caucho (*Castilla elastica* Sessé and *C. ulei*) stands in the Ucayali Valley (Ule 1905: 34-5, Ganzert 1934: 435).[199] In 1886, Bolivia and Peru had signed a treaty, agreeing to appoint and constitute a national commission to study the frontiers of the two republics; the commission was supposed to clearly establish the frontiers, according to which both nations were in undisputed possession of the respective territories on either side of said frontiers (Manning 1924: 159-60). Article 11 of the treaty included the mutual right of free navigation on the principal rivers and their tributaries in the Upper Amazon (ibid.: 161). Between 1892 and 1897, Bolivia continued to push her claims but no active cause for disagreement arose until Peru made concessions in the Madre de Dios regions which were objected to by Bolivia and, to a lesser extent, by Brazil (Holdich 1916: 95).[200]

In 1902, Peru and Bolivia signed a boundary treaty, "according to which all the territory which in 1810 pertained to the jurisdiction or province to the ancient court of Charcas within the bounds of the Viceroyalty of Buenos Aires by acts of the former sovereign shall belong to the Bolivian Republic; and all the territory which at this same time and by similar acts pertained to the Viceroyalty of Lima shall belong to the Peruvian Republic" (Manning 1924: 335). Whilst the President of Argentina was made arbitrator between Peru and Bolivia (Manning 1924: 334), the United States got involved in the conflict over the Acre territory between Bolivia and Brazil (Von Vacano and Mattis 1906: 59). In the late 1890s, the United States increased their efforts to achieve a solution on the boundary dispute, taking sides with the Bolivians in return for the promise of a fifty percent discount on Bolivian rubber over ten

[196] In 1878 alone, over 54,000 people migrated into the Amazon territory as a severe drought struck the Brazilian state of Ceará (Tambs 1966: 262).

[197] Numbers on the population of Acre in those years are varying. The Bolivian historian Ballivián mentions approximately 10,000 settlers living dispersed over 100 *barracas* (1899: 3). This figure appears grossly underestimated for political reasons as, by the time of the publication, Acre had not yet been ceded to Brazil. Others estimate the population in the zone of conflict between Bolivia and Brazil at the turn of the 20th century at 40,000, among which there were no more than 300 Bolivians (Paz 1999: 131). According to Von Vacano and Mattis (1906: 69), Acre accommodated around 25,000 people, including 6000 women and children, in addition to an unknown number of indigenous people; whatever the true population, the actual sex ratio of that time may well be reflected, for the patrons preferred single tappers over laborers who took along their whole family. As late as 1960, female tappers constituted only five percent of all tappers in Brazilian Amazonia (Santos 1980: 85).

[198] According to Tambs (1966: 267), Acre contributed 60% of that year's total rubber production in the Amazon. This figure, however, is exaggerated, since Acre produced no more than 12,000 tons (Santos 1980: 203), while 25,430 tons of rubber were exported via the mouth of the Amazon (Reingert 1905: 114). Given that part of the Amazonian rubber left the region via the ports of La Plata and even the Pacific, Acre's contribution most likely did not exceed 45% in 1899.

[199] In contrast to the process of tapping *Hevea* rubber, whose exploitation constituted a more or less settled industry, the working of *caucho* demanded a nomadic life (Schurz 1925: 222). Unlike *Hevea* trees which were generally worked only during the dry season, caucho tapping underlay a year-round extraction pattern. This was another factor why rubber exploitation had a more severe impact on wild *Castilla* stands as compared to that on *Hevea* stands. (Edelman 1998: 359). Its natural occurrence on non-inundated, upland sites (*terra firme*) in the far interior of the forests (Ule 1905: 15, 25) made it almost prohibitive to establish a permanent extraction system as practiced in the more accessible *Hevea* stands along the waterways. In Bolivia, *caucho* prices were more or less only half those of *Hevea* rubber (Ballivián 1896a: 32).

[200] For the details of the boundary dispute between Peru and Bolivia, see Da Cunha (1975).

years (Souza 1983: 66). Even as late as 1903 and 1904, when the boundary dispute was already settled (see below), appeals for intervention against Brazil were made to the White House by designing neighbors (Ganzert 1942: 439).

By the late 1890s, the Acre territory had assumed the leading role in Bolivian rubber production. In 1899, for example, 12,000 metric tons of rubber were produced in Acre alone (Santos 1980: 203). To reap more of the increasing rubber benefits, Bolivia established a customs house at Puerto Alonso[201] (today's Porto Acre) in the same year, decreeing a Bolivian monopoly of the trade on the Acre river including a thirty percent tax on all rubber going down that river (Ganzert 1934: 435).[202] As the Bolivian government began to collect "an unexpected deluge of revenue from the rubber trade, the previously untaxed independent producers, encouraged by nearby Brazilian authorities, were quick to react and before long the rubber region was the centre of several filibustering expeditions" (Klein 1969: 38). The point at stake was not the customs house as such but its location: for 35 years Brazil had considered Bolivia to be in possession of the territory below the parallel of 10° 20' South (Ganzert 1934: 438), yet the customs house had been established at about 9° 35' South.[203] In response to the 'hostile' act, the Spaniard Luiz Galvez Rodrigues de Aria was sent to the southwestern Amazon, being expected to liberate Acre from Bolivian rule, declare its independence, and form a government seeking for international recognition so as to enable Brazil to annex the region (Souza 1983: 157). The 'peaceful invasion' of Acre was well underway when the government in La Paz tried to exercise jurisdiction over the territory as laid out in the 1867 treaty with Brazil. "Bolivia's hope for an outlet to the sea, as celebrated in South American history as Russia's hunger for a warm-water port, was at stake in this region, as possession of Acre would give egress to the Atlantic by way of the Aquiry and Purús rivers" (Ganzert 1934: 435). In fact, the large territorial losses notwithstanding, the 1867 treaty realized the Bolivian dream of an Atlantic outlet in a twofold way: one route led to the equatorial Atlantic via the Amazon, while the other led down the Paraguay River to La Plata and the open sea (Tambs 1966: 260).

Galvez was a smart man and, despite the vastness of the territory and the few men his mission was staffed with, he made rapid progress in building confidence and finding allies among the Brazilian inhabitants of Acre (see Souza 1983: 157-9). In May 1899, Galvez and his vassals took the Bolivians by surprise, banished them from Puerto Alonso, and occupied the locality where Galvez would proclaim the independent Republic of Acre in July 1899 (Pinheiro 1995: 15). Though backed by the rubber tappers and even the government in Manaus (ibid.), foreign-relations strategies prevented the Brazilian government from recognizing the new republic at that point in time; less than a year after his precarious taking of power, Galvez was deposed by the Brazilian navy (Dwyer 1990: 35). The Bolivians fought back and in 1901 they recaptured some *barracas* on the upper Acre River including Puerto Alonso (Von Vacano and Mattis 1906: 66-9).

Little affected by the boundary conflict, the Acre-based rubber tappers saw to their daily work. As rubber was sold per weight, the majority of *seringueiros* was tempted to add various kinds of materials to the rubber balls to fetch a better price (e.g., Herndon 1853: 327,

[201] Puerto Alonso became the capital of the *Territorio Nacional de Colonias* in 1900 (De Mesa *et al.* 1997: 484).
[202] According to Ballivián (1899: 3), the tax quote stipulated was only 20% on the average export price of ten *milreis* (equivalent to around US$2.5) per kg of rubber, roughly equivalent to five *bolivianos* in national currency. The corresponding rent of fiscal entry for Bolivia would have reached 2 million *bolivianos*.
[203] As early as 1897, Bolivia had established customs houses on the Madre de Dios at Puerto Heath and at the Manú-Madre de Dios confluence to collect revenue from regions claimed by Peru (Fifer 1972: 141).

Weinstein 1986: 66, Hecht and Cockburn 1989: 73).[204] With this practice ever more spreading, 'domestic' rubber became synonymous with 'impure' rubber (Souza 1983: 59). This spurred the interest of British and North American buyers, preoccupied with the pureness of the product, to gain control of the rubber market (ibid.). Once the British had successfully installed their rubber companies in various parts of the Amazon, it was the United States that, at the turn of the century, sought to gain access to Acre's rubber riches via an International Company (see Souza 1983: 54-6). Registered as the *Bolivian Syndicate of New York City*, this Anglo-American Company became the stumbling block when, in December 1901, it was granted virtually sovereign powers in the Acre territory by the Bolivian government (Ganzert 1934: 436). Through the Treaty of Aramayo the Syndicate leased the region from Bolivia, being authorized to charge taxes, exploit rubber, and effect mining (Pinheiro 1995: 15).[205]

Baron Rio Branco, the Brazilian Minister of Foreign Relations referred to the venture as "the first attempt to introduce in our continent the African and Asiatic system of *chartered companies*" considered a "menace" to the "security of this continent" (Baron Rio Branco, cited in Moore 1906: 441-2). From the Brazilian perspective, the treaty with the Syndicate appeared "the most explicit of the attempts of imperialism on South American land since the exploitation of Portugal and Spain in the remote past" (Santos 1980: 207; my trans.). As a consequence of the Treaty of Aramayo, which embraced territory partly reclaimed by Brazil, the Brazilian government began a course of reprisals against Bolivia; in particular, Bolivia's freedom of transit for exports and imports on Brazilian rivers was suppressed (Moore 1906: 441), culminating in the complete closure of the Amazon to Bolivian commerce in August 1902 (Ganzert 1934: 436). In the same month, a force of Brazilian guerrilla with little more than 2000 men initiated a victorious rebellion under the leadership of Jose Plácido de Castro (Pinheiro 1995: 15). This prompted Nicolás Suárez to draft 250 rubber tappers in October 1902, setting up a small private army (*Columna Porvenir*) in an attempt to protect both the Suárez empire and Bolivian sovereignty (Fifer 1970: 134).[206] In addition to Suárez' campaigning, General Pando, the then Bolivian President, gathered some troops to suppress the insurrection and give possession to the Syndicate (Ganzert 1934: 436). It took the defeat of three Bolivian expeditionary forces before Placido de Castro finally won the territory (Dwyer 1990: 35) and proclaimed himself Governor of the Independent State of Acre in January 1903. This was a mere tactical maneuver given that in February 1904 Acre dissolved as an independent state, being incorporated into the Brazilian Federation as Federal Territory of Acre (*Território Federal do Acre*) (Pinheiro 1995: 16).

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[204] The tappers' fantasy was unconstrained: until recently, they added old axes, useless iron, and even rubber extracted from old tires to the rubber balls, locally called *bolachas* (Luna 1988: 18); these are made by slowly rotating a latex-covered paddle over a stream of oily smoke (Weinstein 1986: 63). Quality inspections were only made upon the rubber's arrival at Pará (Von Vacano and Mattis 1906: 78) and hence too late in order to hold a tapper responsible for any kind of undue additive.

[205] The Syndicate was "to possess for thirty years 'the sole, absolute, exclusive and uncontrolled right, power, and authority to collect and enforce payment of' revenues, rents, and taxes, subject only to an accounting and division with the Bolivian Government" (Moore 1906: 440). For details of the contract, see Paz (1999: 291-304).

[206] It is reported that Nicolás Suárez and his combatants fought a heroic battle at Cobija, then called Bahía (De Mesa *et al.* 1997: 486). The Bolivian government later acknowledged that without Nicolás Suárez' brave stand in the Acre campaign even more territory would have been forfeited to Brazil; in addition to a decoration, he was awarded a two-million hectare concession in the Beni which, however, he never implemented (Fifer 1970: 134). According to a recent historic analysis, the Bolivian government received very limited support by the *Casa Suárez* in its effort to defend the national territory, given the high opportunity costs of releasing rubber workers from their duties in times of the great rubber boom (Paz 1999: 138).

Finally the conflict between Bolivia and Brazil was peacefully settled through the Treaty of Petropolis, signed by General Pando and Baron Rio Branco in November 1903. In return for the payment of £2 million, Bolivia agreed to cede not only that part of the Acre territory in dispute but also a considerable portion of the Acre basin south of 10° 20', i.e. a territory to which its title was unquestioned (Ganzert 1934: 438, Fifer 1970: 134).[207] In addition, Brazil obtained from the *Bolivian Syndicate* the absolute renunciation of all its rights and claims under the concession by paying an indemnification of £110,000 (Moore 1906: 441, Pinheiro 1995: 16). The cessation of Acre signified the loss of forty percent of Bolivia's rubber production. "However, there is ample evidence that Bolivian entrepreneurs remained actively engaged in gathering and shipping latex from their former claims on the Madeira, and that native people from the Moxos towns provided the principal labor supply for rubber activities on the river" (Block 1994: 161).

As far as the Acre and Purus Rivers were concerned, it was surprising that Bolivia and Brazil settled their differences without reference to Peru (Holdich 1916: 95-6). In 1904, Brazil and Peru sought to resolve the pending controversy with respect to the Upper Jurua and Purus valleys (Manning 1924: 351-3). Peru and Bolivia, on the other hand, disagreed only marginally on the demarcation of their border. The resulting treaty signed on 17 September 1909 was considered mutually beneficial, being ratified and enforced accordingly (Abecia 1986b: 378). In this context, Nicolás Suárez proved once more his visionary abilities. Little affected by the Acre crisis, the holdings of the Suárez Brothers south of Cobija continued to be the enterprise's mainstay. After 1903, the *Casa Suárez* pushed westwards to Peru, establishing *barracas* along the headwaters of the Tahuamanu, Manuripi and Madre de Dios Rivers and – taking advantage of the pending demarcation of the Peru-Bolivian boundary – effectively controlled a territory about fifty miles beyond the boundary line later established (Fifer 1970: 135).

The great rubber boom, 1898-1919

The Amazon Rubber Boom was a particularly formative era in Amazonian economic history (Barham and Coomes 1996: 144). The boom and its diverse facets have never ceased to be a source of bewildering stories placed somewhere between historical evidence and imaginative myths. The endeavor to separate facts from fiction confronts historians with a mosaic of verity, myth, emotion, analysis, politics, and ethics, as well as the complex legacies of contact, conflict, and confusion in multiethnic and diverse societies (Stanfield 1998: xiii-xvii). The fact is that between 1890 and 1913 the upper Amazon basin was the world's most important rubber-producing region (Fifer 1966: 361); Bolivia's rubber forests contributed a significant share to these riches. When entering the realm of narratives though, we are made believe that "the rubber rush turned good people into bad ones and bad ones into devils"

[207] The balance of the unequal cessions was as follows: Bolivia ceded 191,000 km² to Brazil, while in return it received 3164 km², out of which 2296 km² lay in the valuable triangle between the Madeira and Abuná rivers, £2 million for the improvement of communications between the two countries, and the construction of the Madeira-Mamoré railroad on Brazilian territory (Ganzert 1934: 439). The intended extension of the railroad between Guayaramerín and Riberalta never materialized given the opposition by the House of Suárez and the vested interests of the Bolivian mining sector, which ultimately benefited from the funds' diversion to the highlands (Zeitum 1991: 97). Still, Riberalta, which is laid out like a chessboard, seems to await anxiously the arrival of the first train, as its widest street – the Calle Beni-Mamoré – keeps on reserving space for the track and a station. For the full text of the Treaty of Petropolis, see As Comissões Brasileiras Demarcadoras de Limites 2000b.

(Price 1954: 185; my trans.). Doubtlessly, the expanding market for native rubber increased the prospects to make a fortune in the twinkle of an eye, bestowing rubber an almost mythical dimension. Consequently, "the trees that produce gold" (Zeitum 1991: 85; my trans.) became the lure for countless soldiers of fortune 'in search of El Dorado' (Sanabria 1988).[208] Maneuvering between fact and narrative, Tambs (1966: 254) condenses the story of the Amazon rubber boom as follows:

> "In 1820, a windjammer sailed into Boston harbor with a pair of rubber galoshes from Brazil in its cargo. A return order for five hundred pairs left by the next packet for Brazil, and the rubber boom was on. It would cost thousands of lives, erect a $10 million gilt opera house in the middle of the Amazon jungle, reduce tens of thousands of men to slavery, build a railroad 'with each tie resting on a human skull',[209] and cause the Republic of Bolivia to lose over a third of its national patrimony."

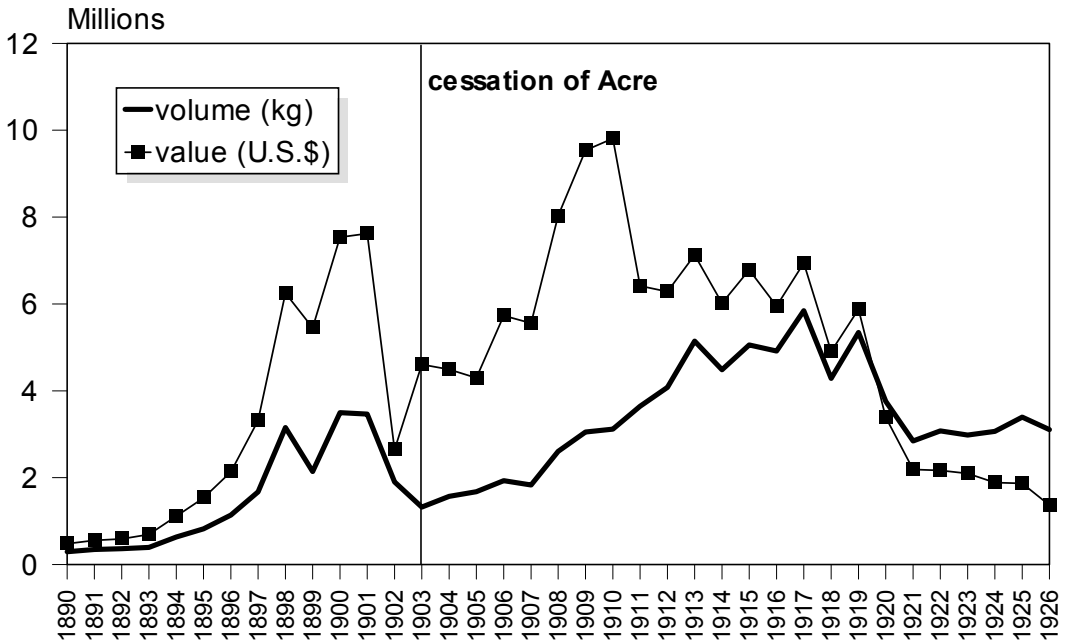
At the turn of the century, international rubber prices rose dramatically, bringing about the great rubber boom in northern Bolivia and elsewhere in the Amazon basin.[210] In Bolivia, the genuine boom lasted from 1898 to 1919 as both volume and value of rubber peaked (see Figure 2-1). The rubber bonanza came just in time to offset the progressively lower returns from *quina* exploitation: since 1902, European demand for *quina* had chiefly been met from Asia, causing a pronounced agony of the *quina* economy in Bolivia, from which it would not recover before 1920 (Pardo 1951: 90).

[208] Depending on the stage of processing, rubber was referred to as 'white gold' (e.g., Tambs 1966: 262) or 'black gold' (e.g., Leutenegger 1940: 115, Hemming 1987: 274; Salas 1987: 9; Sanabria 1988: 94, Zeitum 1991: 83, Roux 1995). The nickname 'black gold' was earned when the emerging tire industry had become one of the main buyers (Weinstein 1983: 54). Another reason might be the change of color in the wake of processing, though rubber gets a black color from age rather than from smoking (see Herndon 1853: 327).

[209] Though frequently cited in this or similar ways, the death toll of the Madeira-Mamoré railway was considerably lower albeit no less devastating. Constructed between San Antonio on the Madeira River and the Brazilian border station Guajará-Mirim on the Mamoré in the period 1907-1912, the railway cost over 6000 lives, or one death for every fifty yards of track (Davis 1996: 355). Though the railway was finalized precisely when the rubber boom turned into a bust, it evolved as one of the main arteries for the import of merchandise from Brazil at considerably lower costs than those inflicted by river transport (Bieber 1984: 52).

[210] Strictly speaking, the rubber boom is a nonanalytical category, so it is ultimately up to the researcher to define its length according to his or her purposes (Weinstein 1983: 69). The great boom tends to be defined more narrowly, for example from 1900 to 1913 (Assies 1997: 12), or from 1890 to 1910 (Melby 1942: 457). The boom *sensu lato*, is defined more generously as lasting from the 1870s to 1910 (Weinstein 1983: 69, 1986: 64), from ca. 1860 to 1920 (Coomes and Barham 1994: 231), or even from 1840 to 1910 (Melby 1942: 452).

Figure 2-1. Volume and value of rubber officially exported from Bolivia, 1890-1926. Up until 1902 Acre's production is accredited to Bolivia.



Source: Pfannenschmidt (1916: 35, cited in Bieber 1984: 32) for the period 1890-1913, and BCB (1946) for the period 1914-1926.

Note: Export values in real prices.

In 1898, i.e. the first year of the boom, rubber exports contributed 49% to the total export earnings in Bolivia (Arce 1979: 328)[211], outweighing those from silver and tin combined (Becerra 1984: 46). Interestingly, the Acre crisis did not jeopardize the boom in Bolivia. Though the volume exported in 1903 plummeted to less than forty percent that of 1900, Bolivian rubber production recovered soon from the cessation of Acre.[212] During the whole period 1911-1920 annual export volumes outweighed those prior to the Acre crisis. The rubber boom, though, rooted in astonishingly high rubber prices rather than in high output (Fifer 1970: 135).[213] The peak was reached in 1910 when Bolivian rubber sold at US$3.15/kg on average (cf. Pfannenschmidt 1916: 35, cited in Bieber 1984: 32)[214], generating a government surplus of about US$750,000 (Barham and Coomes 1996: 130). Prices slumped

[211] This was the highest share ever. Between 1900 and 1910, the average contribution of rubber exports to Bolivia's total export value was 22%, dropping to 12% in the period 1911-1920 (Bieber 1984: 33). In spite of the regional concentration of rubber production, rubber exports also assumed a leading role in the economies of Bolivia's neighbors. In Peru, rubber exports in the years 1897, 1907, 1910 and 1912 represented approximately 16%, 20%, 24% and 18%, respectively, of the country's total exports (Pennano 1981: 9). Even in the more diversified economy of Brazil, the rubber boom brought about unprecedented earnings, with rubber exports accounting for 40% of total export earnings in 1910 (Merrick and Graham 1979: 16). In the period 1912-14, contributions dropped to 17% but rubber as an export commodity was second only to coffee (Leff 1982a: 80).

[212] "The loss of the Acre territory was a serious, but not a catastrophic blow for Bolivia, and exploitation of the Acre reached its peak only after Brazilian ownership was confirmed" (Fifer 1970: 135).

[213] Mean export prices in the decade following the cessation of Acre were US$2.76/kg and hence 42% up the average of the decade before (US$1.95/kg).

[214] The golden days of 'three-dollar rubber' in 1910, allegedly referring to its price per pound (Melby 1942: 458, Fifer 1970: 135), actually referred to the price per kg. The average New York price in 1910 was US$2.27/kg (SUDHEVEA 1970, cited in Santos 1980: 236), ranging from US$1.61/kg to US$3.15/kg (India Rubber World, cited in Barham and Coomes 1996: 32).

in the ensuing years as Asian plantation rubber began to dominate the market[215], but high output levels offset the relative loss of rubber-derived income for one more decade.[216] The pre-World War I drop of prices in both the rubber and tin industries, aggravated by a controversy on a major financial reorganization at national level, seriously upset Bolivia's economy; private bankers opposed to the government's plan of greater control over the circulation of paper currency severely restricted bank credit (Klein 1969: 45), thereby depriving smaller patrons from access to loans they badly needed to finance the operations on their *barracas*. The large rubber houses, on the other hand, were largely dependent on external capital, also because the rubber boom had attracted a number of large firms from abroad. In fact, the increased articulation with the world economy in the wake of the rubber boom and the concomitant influx of foreign capital promoted more mercantile relations of exchange and the emergence of a repressive labor regime (Pacheco 1992: 221).

The boom years enabled Nicolás Suárez and his brothers to consolidate their empire. The death of Vaca Díez in 1897 eliminated one of their main competitors, leaving behind the rubber area along the Orthon river that the *Casa Suárez* took over to complete its supremacy. At the height of their power, the *Casa Suárez* commanded about 6.5 million hectares of forest (Ormachea and Fernández 1989: 8)[217], equivalent to two-thirds of northern Bolivia today. With more than ten thousand employees at their disposal (Melby 1942: 460, Collier 1981: 83),[218] the *Casa Suárez* controlled 20,758 *estradas* in 1909, or sixty percent of Bolivia's rubber output (Fifer 1970: 141-3).[219] As mentioned earlier, the vertically integrated structure of the *Casa Suárez* was a cornerstone of its success. Relying on beef supplies from their cattle ranches near Trinidad, virtually all labor on their *barracas* could be dedicated to rubber production. Other patrons who lacked such a second mainstay depended on food imports from outside the region. Still others sought to combine agricultural and extractive activities, as the density of rubber trees differed according to the environmental conditions. On *barracas* poorly endowed with rubber trees, emphasis was put on cattle raising or the cultivation of sugarcane so as to supply the pure rubber *barracas* with beef and sugar (see Ballivián 1896b: 47-9).

[215] Asian rubber production rose from three metric tons in 1900 to 8753 tons in 1910 and as much as 381,860 tons in 1919, accounting for 0.006%, 12.3% and 90.2% of world production, respectively (see Santos 1980: 234).

[216] Likewise, rubber production in the Brazilian Amazon did not reveal a dramatic decline in the period 1910-1920; a marked drop came only in the 1920s which was due to the rising price of Brazil nut rather than low rubber prices (Weinstein 1986: 70).

[217] The Suárez empire was not the only property of that size in the Amazon. Arana's *Peruvian Amazon Rubber Company*, for example, held legal titles to 5.75 million ha in the Putumayo region (Schurz *et al.* 1925: 364).

[218] Figures on the number of rubber workers vary widely. Fawcett (1910: 517) holds that "the greatest rubber concern in the Beni" – unmistakably that of the Suárez Brothers – had 3000 peons, being practically a state. According to Gúzman (1905: 7), however, the personnel on all the *barracas* along the Beni, Madre de Dios and Orton Rivers was more than 20,000 in the early 20th century. The huge discrepancy cannot be attributed to the balance between the *Casa Suárez* and the remaining firms and patrons, nor to that between the tappers and other personnel on the *barracas*. As a tapper typically worked two rubber trails in those years, the number of laborers mentioned by Melby and Collier appears most realistic.

[219] In Brazil, altogether 174,024 *estradas* were tapped in 1910 (Santos 1980: 83). Since 1908, Nicolás Suárez had been the sole owner of the *Casa Suárez* as all his brothers were deceased; in 1909, he amalgamated the three separate companies existing by then into a limited liability company named *Suárez Hermanos & Co. Ltd.*, followed by *Suárez & Co. Ltd.* after the former's winding-up in 1923 (Fifer 1970: 136; 141).

In contrast to the prosperity of a considerable number of large patrons[220], the majority of rubber tappers lived under precarious conditions dispersed in the forest:

> "The tappers who had grown-up children, already adolescents, withdrew themselves from the center to be able to take over more rubber trails. The camp – always aside a stream, a lagoon or the same river, between tajibos[221] and cacao groves – was always a solitary one with its small fire place. There the family spent two or three consecutive years, barely assigning one of the boys whenever to deliver the rubber produce and to acquire medicines, clothes and food. Thus it happened easily that those people no longer knew what a comb serves for and, in the process of forgetting everything, forgot even the sound of the bells. It was a wild and unpolished humanity" (Coímbra 1993: 117; my trans.).
>
> Referring to those rubber tappers who lived in the forest on their own, Coímbra continues: "For each of the annual festivities, the rubber tapper ... arrived at the embarkation point and then, rowing, at the small town, in order to settle accounts, receive the payment, get drunk and forget the misery of rubber tapping" (Coímbra 1993: 124; my trans.).

The only means to control the rubber tappers in the vastness of the forest was a system of bonded labor. As the system rested, *inter alia*, on the prohibition of subsistence agriculture[222], the tappers were forced to purchase all foodstuffs and other basic supplies from the patrons. Given the grossly inflated prices and the nominal reimbursement for the rubber delivered, most tappers ended up in permanent indebtedness (CIDOB 1979a: 98, Santos 1980: 175, Allegretti 1990: 255, Richards 1993: 22), or a "subtle form of slavery" Fifer (1972: 138). This is at least the prevailing image of rubber tappers in the literature on the rubber boom and its aftermath. Upon closer scrutiny of historical documents we realize, however, that there is little evidence for all-pervading indebtedness among rubber workers. On the one hand, the rigid form of labor control was mainly exerted in remote regions where a patron or company held a virtual monopoly; rubber areas closer to an urban or agricultural market offered more economic opportunities (Weinstein 1983: 20). The resultant competition between different traders and patrons meant better terms of exchange for the rubber gatherers (Stanfield 1998: 46). On *barracas* subject to such competition, subsistence agriculture was less rigidly discouraged, enabling the tappers to gain certain independence from the patrons' provisions. But even in the remote pockets of the basin, rubber exploitation was not entirely controlled by the patrons: "Communities at the ends of remote tributaries collected and shipped the latex brought in from the encircling forests and grew into boom towns, where the rubber gatherers, who worked only in the dry season[223], spent their money during the floods" (Murray 1953: 159). Moreover, the patrons might have discouraged subsistence agriculture but had no means to prevent a tapper from going hunting or fishing (Woodroffe and Smith 1915: 53-7).

The standard image of rubber tappers living in dire poverty, mistreated by unscrupulous patrons, does not apply invariably to the tappers' reality. In Bolivia, the tappers *did* make

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[220] The boom years enabled even less efficient patrons to reap notable benefits from rubber production. In Brazil, for instance, rubber producers were not as well-known for their enterprising behavior as was the country's coffee elite (Leff 1982b: 50).

[221] Old tajibo trees (*Tabebuia* spp.) and solitary palms were used to mark the distance along the rubber trails in *leguas* (Coímbra 1993: 74), that is Spanish miles of 5.57 km each.

[222] It is widely held that subsistence cultivation was prohibited on the rubber estates (see Bakx 1988: 147), though empirical evidence even for the time of the great rubber boom is scarce. In Bolivia, for example, many *barracas* had a common agricultural plot (*chaco patronal*) that was worked by laborers under the control of the patron (CIDOB 1979a: 94). Subsistence crops were plantain, manioc, rice, maize, and some vegetables (Armentia 1883: 10-1). Umlauft (1898: 489) is one of the few authors of that period who confirms that patrons actively discouraged subsistence agriculture on the *barracas* in northern Bolivia.

[223] There are two main impediments to rubber tapping in the rainy season. First, the latex immediately coagulates upon contact with water (Armentia 1883: 120, Von Vacano and Mattis 1906: 77). Second, many rubber stands become inaccessible as the rivers fill (Herndon 1853: 326, Ule 1905: 32).

profits even during the great rubber boom, reputedly the most exploitative period. Upon delivery of rubber at the *barraca* headquarters, "accounts were settled, not always equitable, and with the positive return the laborer went to the store to provide himself with the indispensable or to procure some diversion in recovery of the deprivations long suffered" (Sanabria 1988: 98; my trans.). Everything was available, including champagne for the administrative staff or ordinary wine (*vino collares*) for the laborers (Von Vacano and Mattis 1906: 81), as well as a wide choice of European liquors and a 'hangoverer' (*resacao*) from Santa Cruz or Beni (Sanabria 1988: 99). This testimony shows that despite some fraud on the part of the administrators it was common that rubber tappers attained a positive balance (*saldo favorable*). Doubtlessly they suffered from the harsh conditions in the forest but the regular delivery of their produce and the resulting payment provided the opportunity to socialize and 'forget about life' for a while.[224] The patrons, on the other hand, faced with difficulties to monitor the tappers' activities, facilitating the latter's opportunities to make use of alternate trade channels:

> "Tappers were well placed not to deliver all of the collected rubber to the creditor, selling instead to itinerant traders or shipping the rubber themselves; the apparently low output could be attributed to illness, rain or theft. The creditor ... would have no ready basis for rejection the tapper's explanation. Even worse, labor's fundamental mobility also raised the potential for tappers to disappear with rubber earnings without paying their debt. The risk of desertion would be related, in part, to the terms offered to the tapper; presumably the worse the terms, the more effort estate owners would have to spend on trying to constrain tapper mobility" (Barham and Coomes 1996: 46-7).

Opportunities to bypass the patrons were higher than often assumed, for "there was no lack of those who reached to the remotest centers, to deal in privately owned areas with the most detached tappers" (Sanabria 1988: 101; my trans.).

That rubber workers could not only avoid indebtedness but make a certain fortune emerges from two impressionistic accounts dating from the great rubber boom in northern Bolivia:

> "The laborers more apt who delivered fifty to sixty rubber balls per season gained an astronomical return. They were followed in descendent order by the inexperienced and lastly the sick, the indolent and the dissolute, who only made fifteen to twenty.[225] Even among the latter there were those who, if they did not

[224] The tappers delivered the rubber once a week unless larger distances had to be covered (Ule 1905: 32, 36). If possible, the tappers arrived on Saturday before returning to their centers by Sunday night (Armentia 1883: 11).

[225] Notes on the weight of a rubber ball (*bolacha* or *plancha*) vary widely. The broadest range is provided by Barham and Coomes (1996: 37), suggesting a weight of 10-100 kg each. Generally three groups can be distinguished, viz. a range between 10 and 60 kg per *bolacha* (e.g., Ule 1905: 33, Von Vacano and Mattis 1906: 78, Price 1954: 192, Weiss *et al.* 1989: 3.18), a weight of 60-120 kg per rubber ball (e.g., Fifer 1970: 119, CIDOB 1979a: 237, Luna 1988: 18), or something in between (e.g., Leutenegger 1940: 171, Coímbra 1993: 115, 151). Assuming 50 kg as an average weight, Coímbra's output data would translate into an annual rubber production of 2500-3000 kg in case of the most productive rubber tappers, or 750-1000 kg in case of the least productive. These figures, however, are clearly exaggerated, since output levels were far lower in those years: in 1882, annual production per tapper was less than 17 arrobas (196 kg) (Armentia 1883: 123), rising to 28.6 arrobas (329 kg) by 1894 (Ballivián 1896a: xiii), and 60 arrobas (690 kg) by 1898 (Umlauft 1898: 487). For the period of the rubber boom, a tapper's utmost production was estimated at two tons of rubber per year (Fawcett 1910: 516), but this was true, if at all, only for the forests richest in rubber. In the 1960s, that is at a time of slack demand, a *siringuero* was reported to deliver four to five *bolachas* (each between 120-220 lb.) of smoked rubber a year (Fifer 1972: 154), equivalent to an annual production of 220-500 kg per tapper. As demand rose in the ensuing years, a tapper annually produced 1000 kg on average (Weiss *et al.* 1988: 12). Finally, in the more productive 1970s and 1980s, annual production reached again up to 1200 kg per tapper (Stoian, in prep.). The discrepancy between these figures and those of Coímbra becomes even more puzzling, as Sanabria (1988: 98) confirms that the tappers produced 20-30 *bolachas* per half season (*medio fábrico*), being more or less tantamount to Coímbra's upper production levels. It seems likely that the high production figures reported refer to the weight of 'fresh' rubber balls; compared to the 'dry' rubber balls sold, these have only half the weight (Santos 1980: 78); another explanation would be the confusion of *'bolacha'* and 'arroba', as tappers were also

die of emaciation and tedium, recovered soon, surpassing themselves in their effort" (Coímbra 1993: 116; my trans.).

"Gold pounds[226] were rolling in any tapper's shack, even in the most miserable one. The rubber price rose after all, and whoever possessed rubber had credit and gold. But the gold pounds rolled away with the same ease as they had come" (Leutenegger 1940: 99; my trans.).

These accounts provide little evidence for the purportedly all-pervasive indebtedness of rubber tappers nor for the exclusion of monetary transactions. It is true that the insalubrious conditions in the forest proved a steady health risk, and temporarily hired tappers suffering from malaria attacks, for example, were by no means compensated for the idle days of recuperation. Nonetheless, if tappers got trapped by debts, it was not necessarily the patrons to be blamed for. In addition to the tappers' at times weak physical condition or slack attitude towards work, it was the notorious habit of drinking and gambling that was responsible for some of the debts accumulated (see Leutenegger 1940: 100, Salas 1990: 7, Coímbra 1993: 128-30).[227] Those who refrained from such habit – admittedly a difficult undertaking given the lonesome life in the forest – were relatively well-off, as the hardworking, diligent and healthy tappers were rewarded by the exploitation system.

The seamy side of the rush was experienced by all those who, for whatever reason, did not meet the expectations of the patrons. Nonproductive, indolent and dishonest rubber tappers faced a hard time including physical distress. The whip (*guasca*) became an institution respected by everyone as a new kind of tariff was established on the *barracas*: 50 lashes for a liar, 100 for a thief, and between 200 and 500 for a loafer or a repeat offender (Umlauft 1898: *passim*, Coímbra 1993: 84).[228] Some rubber tappers, especially those who came from far-off places, turned into a cast of its own, namely the 'dissipated' or 'dissolute' (*cimarrones*); these tappers became so desperate in the wilderness that they did not see an alternative but to desert (Ule 1905: 37-8, Coímbra 1993: 111).[229] Upon discovery of their absconding they were immediately pursued by the most alert laborers, and while some managed to escape to Loreto or Rurrenabaque, the majority was caught and flogged or submitted to another cruel corporal punishment (Coímbra 1993: 111). In addition, they were charged a fine of Bs.200 (roughly US$100) by the patron (Umlauft 1898: 487). In isolated cases it happened that the fugitives were tortured to death.[230]

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reported to produce 60 arrobas a year (Umlauft 1898: 487). Bearing this in mind, output figures can be compared to those of Brazil where, according to various sources, annual production ranged from 250 kg to one metric ton per tapper (Santos 1980: 78-9). One further needs to account for the fact that the two tapping seasons do not produce equally. The earlier season (*fábrico grande*), commencing in April or May in dependence of the regressing floods (Armentia 1883: 119) and lasting until July/August, yields up to 50% more than the later season (*fábrico chico*) from October to December.

[226] Great Britain had readopted the gold standard in 1821, establishing higher-valued gold pounds in addition to the relatively cheap inflated British pounds; Britain abandoned the gold standard again in World War I (Greaves 1995).

[227] Idle Sundays were the preferred days for gambling: "One played higher and higher, it did not matter if a month's salary was lost in a single afternoon... One had unlimited credit!" (Leutenegger 1940: 100; my trans.).

[228] Concrete allegations on the abuse of rubber laborers are scarce; it is reported from a *barraca* owned by the *Casa Farfán & Cia.* on the Beni that its French administrator Alberto Mouton earned a shady fame because of his cruel deeds against the laborers, namely flagellation, abduction and even executions (Ballivián 1896b: 37-8). Colonel Fawcett reported that the treatment of native laborers on the Bolivian rubber estates was open to severe criticism as up to 600 lashes had been administered to individuals; this, however, was doubted by Sir Roger Casement, declaring that 50 lashes alone was usually a sentence to death (Fifer 1970: 138).

[229] It frequently happened that laborers escaped, being seduced by the *barraca* owners (see Ballivián 1896b: 45).

[230] It is reported from the Acre-based *barraca* Nuevo Jerusalem, owned by Felisimo Moreira, that in 1899 five *seringueiros* were tortured to death because of high debts and their attempt to flee (Souza 1983: 139).

The incidents mentioned above prompt the question whether conditions on Bolivian *barracas* resembled those reported from the rubber estates on the Putumayo (see Section 0). Evidently, such atrocities were not confined to the Peruvian Amazon: immediately after Hardenburg (1912) and Casement (1913) had released their reports on the crimes of Arana's *Peruvian Amazon Rubber Company*, "other companies registered in London, such as that of Suárez, were subjected to scrutiny, enquiries were demanded, and the British Minister in Bolivia was urgently instructed to submit information about conditions on the Bolivian rubber estates" (Fifer 1970: 137).[231] Colonel Fawcett, commissioned with boundary surveys in Bolivia, reported at the peak of the rubber boom that in the 1860s, "the wild Indians were not so markedly hostile as they are today. ... Since that time the savage has been sacrificed to rubber; slaughtered often under circumstances of horrible barbarity; his villages burnt and his farms destroyed; either to secure forced labour for the rubber estates, or to exterminate him from the field of its exploitation" (Fawcett 1910: 515).[232] The British Minister Gosling, on the other hand, found little evidence for 'another Putumayo' in the Beni, as only in "very unusual instances ... natives are tortured by their employers" (Gosling cited in Fifer 1970: 140). But the fact remains that "the frenzied search for quinine and rubber also brought under the yoke and exterminated numbers of tribes which had hitherto remained secluded in the forests and successfully escaped the benefits of civilization" (Osborne 1955: 87).

It is characteristic that a foreign government sought clarification as to whether or not indigenous groups were subject to abuse and torture. As was the case in the *quina* trade, the Bolivian state was concerned with reaping part of the benefits accruing from the burgeoning rubber trade rather than paying due credit to the plight of the natives. It could hardly go unnoticed that virtual slaving raids (*correrías*) were organized on the Javary in the Acre territory and in Bolivia's Iténez basin (see Schurz 1925: 218): when patrons faced a shortage of labor they equipped their dependants with fire arms, sending them off to capture adolescent male Indians and those in a good shape; during these nocturnal attacks, children, women and elder men were often killed (see Pando 1897: 111, Von Vacano and Mattis 1906: 82, Luna 1976: 88-9). In the Peruvian Province of Madre de Dios, violence and massacres relating to the rubber industry were the rule rather than the exception throughout the 1880s and 1890s (Pennano 1981: 12).[233] In Brazil, the rubber boom virtually wiped out most of the tribes in the lower Amazon by the combined effect of war, enslavement and imported diseases (Weinstein 1983: 11).

In the Bolivian Amazon, the notion of the suffering among native groups in the wake of the rubber boom is somewhat ambiguous. "Relations with the Indians at various points along the

[231] Being the border river between Peru and Colombia, the Putumayo was claimed by both nations because of its rubber riches; the governments' no intervention policy – resulting from the 1906 verdict of Pope Pius X who had been made the arbiter in 1904 – facilitated the violence on the Putumayo estates (see Pennano 1981: 10). Arana appropriated some 31,000 km² of rubber forests by purchasing land at the ridiculous price of £116,700 from patrons who were highly indebted; in contrast, Nicolás Suárez was offered £900,000 for his 64,000 km² territory in 1905, rising to £12 million in 1910 (ibid.: 10-1).

[232] Fawcett concludes in unmatched farsightedness that "it is more than doubtful if the really wild Indians of South America are amenable to civilization as understood by those with whom they come into contact. The time will come when they must have their recognized reserves or disappear" (1910: 515-6).

[233] Virtual slavery was common practice; as late as the period 1905-1910, native rubber workers were sold at £20-40 in Iquitos (Pennano 1981: 12). In Bolivia, the ruthless slave trade involving the Indian population (*comercio de bárbaros*) occurred at least in the late 19th and probably still in the early 20th centuries. Children sold at Bs.100-200 (Pando 1897: 112), while on the Suárez *barracas* adult Indians had a market value of £80 (Bs.1000); this high value, along with the scarcity of labor, was believed to "make it uneconomical for the controlling interest to treat human life lightly" (Fawcett, cited in Fifer 1970: 139).

banks had always been precarious but, on the whole, relatively friendly, and even the most hostile had apparently become accustomed to the river traffic and the constant portaging" (Fifer 1970: 135-6). Colonel Fawcett stressed in his report to the British government that the barbarities were not so typical in the Beni as in the Putumayo, concluding that "the Indians are said to be relatively contented with their lot" (Fawcett, cited in Fifer 1970: 139). This, however, seems too benign a judgement given that many indigenous settlements and entire peoples disappeared during the genocide in the wake of the region's exploration and rubber exploitation (see Luna 1976: 82-103, SNDR 1995a: 16).[234] Moreover, the tribes succeeding to evade extermination were subject to rapid assimilation (CIDOB 1979a: 136).[235] The more amenable tribes tended to lose their identity through miscegenation and other peaceful processes, whereas the less pacific or more helpless peoples were gradually exterminated by intertribal strife or in clashes with the rubber gatherers, in addition to the heavy toll claimed by disease among some indigenous groups (Schurz 1925: 217). The ambivalent impact the rubber trade had on the native population has been summarized as follows:

> "The establishment of rubber estates based on the hevea tree and trade activities along rivers throughout the basin also affected native groups; adversely, by cutting off their access to traditional use areas and spreading immigrant diseases rapidly, and perhaps less adversely by providing access to steel tools, weapons, and other foreign goods of high use value. In many areas, however, tribes were pushed by or retreated from the advance of the rubber trade into the very remotest reaches of the basin where they remain today" (Barham and Coomes 1996: 143).

Indigenous groups in northern Bolivia responded to the 'rubber invasion' in various ways. The *Cavineño*, for example, retained their pride and independence by resisting the seductions of the patrons (Ballivián 1896b: 41). Other tribes fought a ferocious battle against the invaders[236], but the general pattern was that the early years of independent rubber tapping were soon succeeded by debt servitude forced upon the natives by stern patrons (see Ballivián 1896b: 36).[237] Most vulnerable were the more amenable Indian tribes such as the *Araona*[238], *Toromona* or *Chacobo* (Fifer 1970: 127, Centeno and Fernández 1998: 24). At the eve of the rubber boom there were few individuals like Ballivián who held that the rubber forests were snatched from their "legitimate possessors: the savages" (1896a: 3).[239] Rather, the prevailing attitude was represented by the Bolivian state which tolerated the rubber industry's conquest of the northern territory without being overtly concerned with the fate of the Indians, i.e their extermination or acculturation.

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[234] For example, Colonel Fawcett found during his Bolivian exploration in 1913-14, that "the Madidi and its tributaries harbour only five small tribes of not a dozen souls in each, a terrible indictment against the rubber industry, chiefly responsible for their disappearance" (Fawcett 1915: 220). Fawcett's remarks, however, should not be taken at face value, as little below he holds that within thirty square miles there were "at least eight thousand savages, all cannibals, divided into four tribes, all at war with one another" (ibid.: 222).

[235] It is held that each *barraca* employed indigenous hunters who combed the forest in search of bushmeat, in particular during the rainy season when fishing was suspended (Ballivián 1890a: 32).

[236] The *Guarayos*, for example, did not hesitate to attack the rubber centers and kill most of their habitants (see Ballivián 1896b: 40). They in turn suffered heavy losses through ambushes by the overseers of certain *barracas* (see Leutenegger 1940: 145). From a *barraca* at the region's northeastern fringe it is reported that ferocious 'barbarians' – *Caripuna* – killed dozens of women and children in 1892 (Luna 1976: 87-8, Centeno and Fernández 1998: 24). More vulnerable, however, were the rubber patrons and tappers, quite a number of whom met a violent end through Indian attacks (see Luna 1976: 118).

[237] Hostilities were not confined to the rubber laborers, as even among the patrons there were casualties when no agreement could be reached on diverging claims (see Ballivián 1896b: 43); armed disputes were by no means exceptional (Von Vacano and Mattis 1906: 81).

[238] The Araona had first been contacted in 1678 by Franciscan missionaries (Métraux 1948: 441).

[239] Ballivián was clearly ahead of his time. In 1919, he presented his anthropological thesis titled "El Indio" in which he assumes an unambiguous antiracist stand (Salas 1990: 2).

Those groups that survived the genocide and which are neither christianized nor sedentary, are locally referred to as *chamas* (Wentzel 1986: 4), if not barbarians (*bárbaros*) or savages (*salvajes*).[240] The people most decimated among them are the *Pacahuara* (*Pacaguara* or *Pacavara*). This "barbarous race, as yet unconverted, wild and warlike, ..." (Herrara 1835: 101) once resided in greater numbers on the shores of the Beni and lower Madre de Dios (Armentia 1883), between the Genejoya and Geneshuaya (Heath 1882: 4), and the Mamoré, upper Madeira, and lower Abuná Rivers (Métraux 1948: 449), as well as the headwaters of the Orthon River (Umlauft 1898: 490).[241] By the early 1990s, however, they were reduced to a population of less than ten (Diez Astete and Riester 1996: 65).[242] Similarly, the *Araona*, once the most extensive and expansive people of the *Territorio Nacional de Colonias*[243] (VAIPO 1998), who lived nomadically along the Madre de Dios and Orton Rivers "in civilised contact with the neighboring white traders" (Labre 1889: 497-8), have been displaced to the headwaters of the Manupare River where 94 descendants share a territory of 95,036 ha (CPTI-CIDOB 1997, VAIPO 1998).

Indigenous peoples mentioned by early explorers of northern Bolivia who appear to have been exterminated, since there is no evidence for their further existence on Bolivian or adjacent territory, comprise the *Machui*, erstwhile inhabitants of the left bank of the Madre de Dios (Armentia 1883: 130) and probably a sub-tribe of the *Araona* (Métraux 1948: 439), as well as the *Cunuparó*, formerly occupying the inland forests near the Caramanu or Abuná River (Labre 1889: 499). Other tribes have effectively been displaced from the northern Bolivian Amazon. Their names and whereabouts can be traced by means of various travel reports and contemporary ethnographic literature. They embrace the following groups:

The *Guarayo*, former inhabitants of the Beni and Madidi Rivers (Armentia 1883: 9, Leutenegger 1940: 298), who are nowadays encountered at the Andean foothills.[244]

The *Cayuvaba* (*Cayubaba* or *Cayuvava*), who had lived for some while among the *Chácobo* (Armentia 1883: 127) before they were gathered by the Jesuits from the lower Beni River to be integrated in the *Mission* of Exaltación (Armentia 1897: 67, cited in Paz 1999: 146);

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[240] The term *bárbaros* dates back to the early Republican period of Bolivia when the dominant highland classes – independent of their indigenous or non-indigenous background – extended this designation to all indigenous peoples of lowland Bolivia. The National Census of 1854 included 760,000 persons grouped under this category (De Mesa *et al.* 1997: 375). This classification reflected a general trend as "in the 19th century, Latin American thought was largely defined by the debate over civilization and barbarism" (Dos Santos 1996: 149). Nowadays, a distinction is made between lowland peasants of indigenous descent, locally referred to as *cambas*, and 'uncivilized', that is non-baptized, tropical-forest Indians disparaged as *bárbaros* or *salvajes*; according to a stereotype shared by both *cambas* and the elite, the barbarian or savage is "wild, nomadic, without religion, and often treacherous" (Jones 1985: 4).

[241] Their allegedly huge geographic distribution can be attributed chiefly to two factors: their (semi-)nomadic lifestyle and ethnographic guesswork in the absence of reliable sources.

[242] Their decimation not only owes to diseases and violence brought about by the expanding rubber economy but also to inter-tribal conflict. For example, two *Pacaguara* subgroups from the Orton River were exterminated by *Araona* in 1885 (Métraux 1948: 449). At around the same time, the southernmost *Pacaguara* were pushed toward the north by *Tacanan* tribes (ibid.).

[243] The *Territorio de Colonias* was bordered by Brazil to the north, marked by the oblique line between the confluence of the Beni and Mamoré to the headwaters of the Javari River, the Madre de Dios and lower Beni Rivers to the South and Peru to the west (Luna 1976: 40). By and large, it is tantamount to today's Department of Pando combined with some parts of the Province of Iturralde.

[244] Another group of *Guarayo* lives in the Province Ñuflo de Chavez (Department of Santa Cruz) but has nothing in common with the forest-based (*selvícola*) *Guarayo* further north who belong to the *Pano* group (INE 1999b).

less than 200 have survived north of Santa Ana on the left bank of the Mamoré (Mirtenbaum 1991: 17, SIL 1996).

The *Caripuna*[245], a nomadic tribe once numerous on the upper Tahuamanu (CIDOB 1979a: 11, Sanabria 1988: 114), the Abuná and upper Madeira (Gibbon 1854: 293-5, Métraux 1948: 450), and between the Acre and Orton Rivers (Von Vacano and Mattis 1906: 91); nowadays they are only encountered in Rondônia where they are reduced to clans of seven to ten people (Estado de São Paulo 1997), in addition to the few groups remaining in the region of Iquitos (Ronceros 1999).

The *Canamari*[246], once living close to today's Bolpebra (see Labre 1889: 500), who have survived in an extremely isolated area on the Javari River in the interior of Brazil's Amazon State (A Escola do Futuro da Universidade de São Paulo 1998, Amigos da Terra 2000).

The *Ipurina*, erstwhile inhabitants of the area between the Acre and Orton Rivers (Von Vacano and Mattis 1906: 91), as well as the Purus (Ballivián 1890a: 34), now living dispersed in Acre.

The *Iñapari,* who once inhabited the Bolivian-Brazilian border region along the Manuripi, Tahuamanu and Acre Rivers (Luna 1976: 83, 102), and of whom a few individuals are left on the Piedras River near Puerto Maldonado in the Peruvian Amazon (Pozzi-Escot 1997).

As we have seen earlier through the example of the Putumayo atrocities, irrational fears of allegedly ferocious and bellicose tribes contributed a good part to the outburst of violence against the native population. Despite the lack of clear evidence for anthropophagy[247], many tribes were reported to be cannibalistic[248], a 'fact' believed to justify their extermination.[249]

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[245] This tribe is a prominent example of the violent outbursts between the rubber tappers or traders on the one hand, and the native population on the other. Probably in 1904, Gregorio Suárez, one of the six Suárez Brothers, was killed by *Caripuna* on the upper Madeira; once Nicolás Suárez had learned of the ambush, he immediately set off downstream with a handful of people to take revenge by annihilating every man within a camp of *Caripuna* who had gathered around Gregorio's severed head on a spear (Fifer 1970: 136).

[246] The *Canamary*, supposedly identical with the *Canamari*, are considered a subtribe of the *Araona* (Armentia 1887: 53-4, cited in Métraux 1948: 439).

[247] "It is impossible to say whether cannibalism has had any characteristic geographical distribution in South America. In this matter we have far too few reliable facts to go upon" (Nordenskiöld 1999: 136). At least as to the lower Amazon, there has been no further evidence for cannibalism since the eighteenth century (Souza 1983: 102). "While it was true that there were other Indians who practiced cannibalism and did fatten up their captives before eating them, this practice, he [Father Cristobal de Acuña] said, had been greatly exaggerated by the Portuguese in order to legitimate their taking Indians as slaves" (Taussig 1987: 61).

[248] Hints on purportedly anthropophagous tribes are numerous throughout the Amazon. Typically, none of the authors had been in direct contact with cannibals as otherwise, this goes almost without saying, their reporting would have been rendered extremely difficult. Even the French explorer de la Condamine, generally a very credible source, formed a poor opinion of Indians: "... notwithstanding that there are at present no man eaters along the banks of the Marañon, there yet exist inland tribes of Americans who eat their prisoners" (de la Condamine, cited in Hemming 1996: 105). In northern Bolivia, rumor went that "the river Abuna, with its wooded banks, [is] peopled by cannibal Indians" (Labre 1889: 502), and along the Madeira River, the *Ararás* or *Jumás* were believed to be cannibals, as were in part the *Ipurinas* or *Cangiti* on the Purus (Ballivián 1890a: 33-4). In the early 20th century, Von Vacano and Mattis (1906: 91) still report singular incidents of cannibalism among 'savage tribes' in the Acre territory, while Fawcett (1910: 514) holds that Bolivian 'savages' are "usually cannibals". Interestingly, the Spanish version of Heath's report on his exploration of the Beni River includes a passage on "some anthropophagous Indians - the Araonas" (Heath 1882: 4). Probably he was not too convinced himself of that 'fact', as there is no such notion in his English report to the Royal Geographical Society of London (see Heath 1883).

But even tribes reputed for their hospitable and amenable character were hardly better-off. They were seen as sources of easy gains because of the incredible 'cheapness' of the forest products they exchanged for "articles with little value and pernicious drinks", which had a disastrous effect on the "unfortunate race" (Ballivián 1890a: 34).

There is no coherent picture how severe atrocities against Indian and Mestizo laborers on Bolivian *barracas* actually were. On the one hand, economic logic impeded to be too abusive with the dependents. "Labour being scarce is very carefully preserved" (Fawcett 1910: 521) was reported at the height of the rubber boom and might well reflect the prevailing credo among the rubber barons. How much labor – independent of its Indian, mixed, or white origin – was appreciated in those years becomes apparent from a contemporaneous account from the Suárez headquarters at Cachuela Esperanza: "One could purchase all, as much as one would like; credit was reduced not even by debts" (Leutenegger 1940: 97; my trans.).[250] Indeed, it was common practice in the stores on the rubber states to provide the tappers with all they wanted as long as their labor force could thus be assured (see Price 1954: 186). To this end, rather than exterminating whole tribes, the rubber barons and patrons sought to establish stable ties with the native population.[251] Far from entailing mere economic exchange, patron-client relationships emerged that bonded both Indian and Mestizo laborers to their respective patron:

> "Socially, the caucheros imported two durable and crucial institutions found throughout Latin America: patrón-client relationships and fictive kinship ties, or *compadrazgo*. The cauchero assumed the paternalistic role of the patrón – one inestimably potent if his Indian clients perceived him as a supernatural being – bestowing life-giving gifts to his workers. The Indian clients cared and labored for their patrón, supplying him with food, company, and rubber. The patrón-client relationship might be cemented though a ceremonial exchange of compadrazco [*sic*],[252] one involving obligations for both parties. As a result of this asymmetrical but reciprocal exchange, the patrón assumed more seigniorial power, while the client raised his social status and gained certain sense of security. These types of social relationships helped close cultural gaps and tempered some of the more extreme labor demands of caucheros" (Stanfield 1998: 45).

> "Although patróns [*sic*] could be brutal, thoughtless thugs when interacting with Indians, one can comprehend, if not accept, their behaviour. In debt himself to a merchant or primary aviador, yet still dreaming of power and position, the cauchero inevitably met frustrations. His workers never delivered as much rubber as he wished, and they might run away in the jungle. Moreover, the cauchero risked his own hide in collecting rubber and trading goods, for disease, accidents, thieves, and violence could touch anyone. If rubber prices dropped in London or New York, he had to trade more of his devalued rubber for the more expensive imported goods controlled by his own merchant patrón. On his return upriver, he had to demand more rubber from his Indian workers in compensation for the more expensive goods he carried. The system lacked justice or stability. Profits accumulated at the top and were exported to foreign markets. Those who worked hardest earned the least" (Stanfield 1998: 48).

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[249] "They [the *Parintintin* on the upper Madeira] now have the reputation of being cannibals, and no settler dares to set up a hut on their territory, although it contains very rich growths of rubber trees. The Brazilian government does not allow the improvement of these savage races by the only practical method, namely extermination, but trusts to the efforts of a few missionary friars" (Edward Mathews 1872, cited in Hemming 1987: 298).

[250] On Brazilian *barracas*, though, it was common that the tappers with a negative balance (*saldo en contra*) were only given the indispensable (Ule 1905: 37).

[251] The question what is needed in the rubber industry has been answered "three things: people, people, and people, or *fregueces*, *mozos* and *bárbaros* (piece-rate workers, day laborers, and savages)" (Umlauft 1898: 483).

[252] Such fictive or ritual kinship was especially sought with river traders or captains. The more upstream a settlement the more important became their role. All river residents strove to establish good relations with them, as supplies of salt, sugar, gunpowder etc. largely depended on the former's goodwill. Once a captain or trader had been made *compadre* he was obliged to stop always in the places of his godchildren even when there was no opportunity to pick up rubber or other forest products (Leutenegger 1940: 61).

It is also true that the rubber economy eroded the subsistence base of the native population. "The rubber era was a time of extreme social, cultural, and physical disintegration for virtually all native peoples of Beni, Pando, and northern Santa Cruz Departments" (Jones 1985: 12). Their integration into the world economy and the onset of international capitalism alienated communal property, reduced native political power and, worse, brought up the rapid acculturation of the region's indigenous groups; the upcoming rubber boom thus completed the process of native dispossession begun under Spanish administration (Block 1994: 173). The boom also generated a local elite – depending largely on European capital (see Pacheco 1992) – that succeeded in dominating the economy and politics in Pando and Beni in the first half of the 20th century. However, this local elite lacked political weight at national level, for rubber extraction hardly integrated the region with the rest of the country given the direct channels to Europe via the Atlantic outlet (CIDOB 1979a: 4). Paradoxically, the rubber boom brought about the full integration of northern Bolivia into the world economy, as labor[253], capital and trade inflows provided the links with the external world, but it hardly succeeded in advancing national integration. Only in later years, the region would benefit from the linkages established through immigrants from the Santa Cruz, Beni and, to a lesser extent, La Paz Departments.

During the great rubber boom the following changes occurred in Bolivia:

quina trade suspends as *Cinchona* plantations in Asia dominate the supply

the *quina* decline is offset by the burgeoning rubber trade

the rubber boom completes the region's integration into the world economy, with the rubber economy being increasingly dependent on foreign capital

the *barraca* system consolidates along with the aggravation of patron-client relationships

the native population suffers most from intensified resource and labor exploitation

the Bolivian state benefits from rubber revenues without gaining control of the rubber forests; as a consequence, the Acre territory is lost to Brazil.

Aftermath of the boom: the first rubber crisis, 1920-1940

Around World War I, the rubber plantations in Southeast Asia commenced to produce on a large scale. Given their far lower production costs[254], prices of native rubber came under pressure.[255] High output levels in Amazonia initially offset the price slump, but in 1919 the boom as such was over (Fifer 1970: 135). Bolivia's annual production hovered around 3000 tons in the 1920s (BCB 1946), diminishing to less than 1000 tons during most of the 1930s

[253] At the end of the great rubber boom, the population of the *Territoro de Colonias* was estimated at 20,000, including 5000 in the Province of Vaca Diez. Interestingly, Bolivians were in the minority as the distribution by nationalities was approximately as follows: Bolivians (25%), Brazilians (35%), Peruvians (10%), Syrians (8%), Europeans (5%), Japanese (2%), miscellaneous (15%) (Schurz 1925: 216).

[254] "By 1915, plantations in the East had cut production costs to less than 25 cents per lb. compared with about 60 cents per lb. for Bolivian 'Up-river Fine'" (Fifer 1972: 139).

[255] Even before the emergence of plantation rubber, Amazonian rubber faced competition from native rubber produced in Central America or Africa. Within Amazonia, Brazil was the chief producer, contributing 80 to 90% of total basin production in the early 20th century, as compared to Peru and Bolivia with roughly 5 to 10% each (Barham and Coomes 1996: 30).

(see Figures 2-1 and 2-4).[256] In part, this was an effect of the Great Depression that generally upset political and economic stability in the 1930s (PNUD 1998b: 2). While elsewhere in Amazonia an exodus from all the rubber districts ensued the price drop (Schurz 1925: 224), the Bolivian tappers lingered on the *barracas*. The Suárez empire remained intact and, by 1925, the tempo and prosperity of life at Cachuela Esperanza was not noticeably impaired (Fifer 1970: 143). Even during the rubber depression new rubber workers were always needed, "for the industry has proved exceedingly wasteful of human life" (Schurz 1925: 223-4). Yet the invention of synthetic rubber in 1926 led to a further decline in demand for native rubber (CIDOB 1979a: 16).[257] As a result, international capital, crucial for maintaining the cash flow within the region, was gradually withdrawn (Pacheco 1992: 222). The situation aggravated in the period 1932-35 when the Chaco War between Bolivia and Paraguay drained many men from the rubber region to the combat zone in the south (Fifer 1972: 221).

Bolivia's first rubber crisis brought about a renewed phase of isolation (Wittkamp 1993: 4). As the rubber industry declined, state interest was redirected to the mining sector which experienced an upsurge due to the boom in the tin industry; by the 1920s over 70 percent of Bolivia's export income was derived of tin (Langer 1989: 31) and, by 1929, Bolivia came second only to Malaya as the world's biggest tin producer (PNUD 1998b: 2). Northern Bolivia, however, fell back into agony and by the 1930s Riberalta had superseded Cachuela Esperanza as the center of the northern Bolivian Amazon (see Chávez 1923: 11-2, Letellier 1964: 44-8).[258] At the same time, the paralyzation of the rubber industry induced an economic crisis in Santa Cruz as the lack of rubber earnings undermined its function as the industry's financial center (Ardaya 1995: 61). Though Nicolás Suárez had accumulated extreme wealth during the boom years, much of his fortune went in keeping his organization afloat between 1926 and 1930 (Fifer 1970: 143). Other rubber barons, especially the ones indebted in Riberalta, moved to Caupolicán in order to reengage in the *quina* trade or in other extractive activities (Wentzel 1986: 4). Since 1920, this trade had been revived as European quinine factories sought to meet their demand for raw material beyond the monopoly of the Dutch *Kinabureau* (Pardo 1951: 90). But it was not until 1935 that *quina* earnings significantly offset at least part of the rubber losses (see Figure 2-2). With alternate sources of income being desperately needed in the 1920s, Francisco Seiler – the successor of Braillard and Clausen – was commissioned to initiate the export of Brazil nuts to Europe (Quiróz 1996: 29).[259] In the late 1920s Brazil nuts emerged as an important export commodity (CIDOB

[256] With the motor industry being by far the largest buyer of rubber in those years, technological developments also left their traces on the world rubber market. "In 1921 the rubber slump had been accentuated by the displacement of the fabric tyre by the cord tyre; in the great slump there was a supersession of the cord by the balloon tyre" (Bauer 1948: 26).

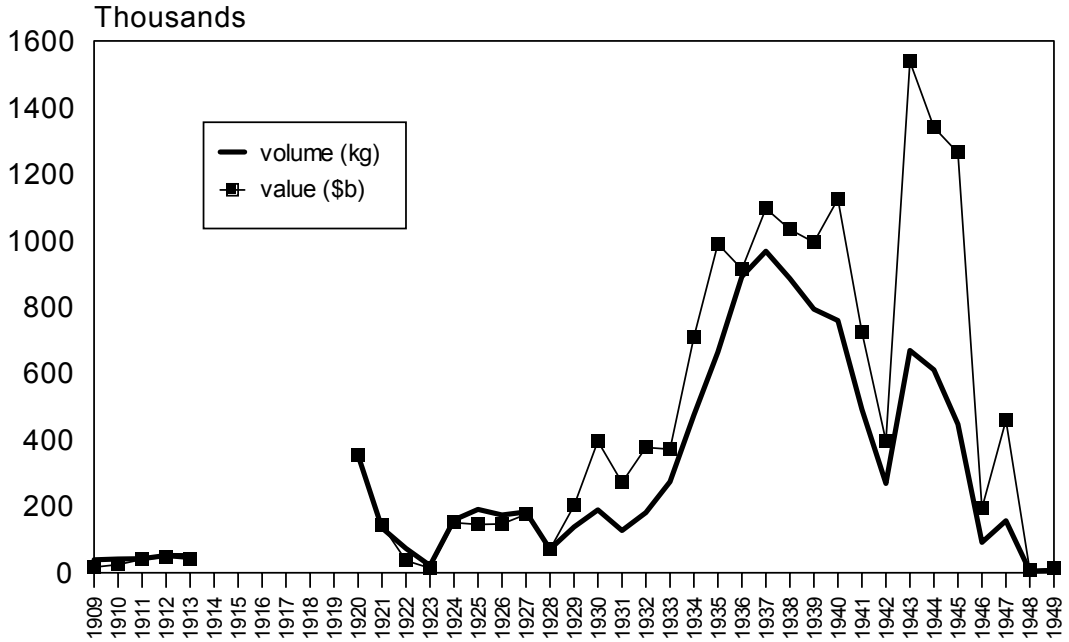
[257] By 1946, the balance between natural and synthetic rubber was more or less equal, with total production amounting to 851,000 and 820,000 tons, respectively (Barlow 1978: 408). Later on, synthetic rubber constituted about two-thirds of world rubber production: in the period 1973-1987, the production of synthetic and natural rubber rose from 7.3 to 9.4 million metric tons and from 3.4 to 4.6 million tons, respectively (ibid., Weiss *et al.* 1988: 9). For the advantages and disadvantages of synthetic vs. natural rubber, see Polhamus (1962: 301-30).

[258] Along with the gradual decline of Cachuela Esperanza, Guayaramerín experienced a remarkable influx of migrants; its population grew from a mere 200 in the early 1920s (Chávez 1923: 13) to 2016 in 1950 (De Mesa *et al.* 1997: 760), equivalent to an annual population growth of around 7.5 percent. Between 1950 and 1976, that is parallel to the post-war rubber crisis and the fragmentation of the *Casa Suárez*, Guayaramerín's population grew by 8.6 percent annually, reaching 12.520 in 1976 (cf. De Mesa *et al.* 1997: 760).

[259] As early as in the late 18th century, Brazil nut from Pará had been traded internationally, albeit the volume exported did not exceed five metric tons per year (Anderson 1999: 50). By 1921, Brazil nut had overtaken rubber as Pará's most valuable export commodity (Weinstein 1983: 258). In Bolivia, Brazil nut had been traded internally long before: since the 16th century, the *Toromona* had exchanged the nut with Indians from the highlands (Luna 1976: 97), and in the 17th century the 'new almond' from Bolivia was traded as far as Peru

1979a: 16). This altered the mode of production on the *barracas* as nut extraction had to be fit into the annual work schedule (see below).[260]

Figure 2-2 Volume and value of Peruvian bark officially exported from Bolivia, 1909-1949.



Source: Based on Pfannenschmidt (1916: 25, cited in Bieber 1984: 31) for the period 1909-1913, and BCB (1946: 79) and Pardo (1951: 91-2) for the period 1920-1949.

Note: Value in real prices [one *peso* ($b) was roughly equivalent to US$0.3-0.5]; no data available for the period 1914-1919.

Bolivia's second *quina* boom lasted from 1935 to 1945, initiating a number of laws for its protection, none of which was effective (Pardo 1951: 152-4). Demand of both the USA and Europe increased well before the outbreak of World War II given that independence of the Dutch *Kinabureau* was sought. The National *Quina* Bank had long closed down in Bolivia; it was replaced by the National *Quina* Factory which had been set up in 1938 for domestic value adding. Along with another factory – 'Quimbol', owned by *Barrero & Cía.* – the National *Quina* Factory absorbed more than 1000 metric tons of *quina* by 1946 (Pardo 1951: 92).[261]

Before the second *quina* boom gained momentum, Seiler had established two processing plants at Conquista and Fortaleza (Coesmans and Medina 1997: 29). But it was again Nicolás

(Zeitum 1991: 200). In the mid-19th century, Brazil nut from the upper Madeira – then under Bolivian sovereignty – were exported to the Atlantic coast (Gibbon 1854: 311). Toward the end of the 19th century, the *Cavineño* on the upper Beni sold or bartered Brazil nut and cacao – each at three *pesos* per arroba – on the market of Tumupasa in the Caupolicán Province (Armentia 1883: 17-8). Next to their commercial function, Brazil nut provided the principal staple for many indigenous groups (Gibbon 1854: 123, Luna 1976: 97).

[260] From the 1920s onwards, a *barraca* could therefore be defined as a "territorial extension with rubber and Brazil nut trees, controlled by a patron dependent on whom are rubber tappers and Brazil nut collectors working for him" (CIDOB 1979a: 237; my trans.). With the incorporation of Brazil nut collection as a second mainstay of the *barraca* economy, the English translation 'rubber estate' became obsolete. For this reason, the Spanish term *barraca* will be retained throughout the text.

[261] This volume is not included in Figure 2-2 because of the lacking breakdown of annual operations.

Suárez who foresaw the opportunities of an expanding Brazil nut market. He became the first to import cracking machines from England in 1931 in an effort to add a third mainstay to his rubber and cattle empire (Fifer 1970: 144).[262] Though there is no evidence that Suárez turned again to the *quina* trade, the region as a whole benefited from reactivating this activity. From 1932 through 1940, the export values of both *quina* and Brazil nut were more or less equal to those of rubber (see Figures 2-2, 2-3, 2-4), illustrating the successful diversification of the extractive economy in the wake of the rubber crisis.[263] But Brazil nut and *quina* did not constitute the only NTFPs bridging the income gap left by the rubber crisis. In the 1920s, a vivid trade in hides and skins of forest animals developed, with the Suárez headquarters at Cachuela Esperanza being an important transshipment point (see Letellier 1964: 44). Trade in living animals, or parts thereof, also began to play a role: for example, feathers of brown heron (*pluma de garza morena*) fetched good prices, in particular between 1936 and 1938 (Peralta, pers. comm.).

Figure 2-3 Volume and value of Brazil nut officially exported from Bolivia, 1929-1945.

Source: Based on BCB (1946: 21, 78).

Note: Export values in real prices (converted from Pound Sterling to US dollar).[264]

Notwithstanding the then rather low prices of Brazil nut in the international market, earnings derived from their export constituted an important supplement to scarce rubber incomes in the period 1932-1940. During World War II, the importance of Brazil nuts declined as the rubber trade revived (see also Figure 2-4) and their exploitation suspended between 1943 and 1945. However impressive the efforts to diversify the regional economy in the pre-war period, they cannot conceal that the days of fabulous rubber prices, unprecedented wealth, and far-flung expectations were gone. Debt-creditor relationships persisted and, ironically, many patrons

[262] Up to the present day, the building of his processing plant at Cachuela Esperanza is still intact. It frequently changed hands but mostly served as a place to process NTFPs. Recently, it has been dedicated to palm heart processing.

[263] It needs to be borne in mind that the *quina* trade covered only a small fraction of what is defined as northern Bolivia here. But the personal continuity between rubber and *quina* stakeholders was so pronounced that socio-economically the exploitation of *quina* had a strong bearing on the region as a whole.

[264] The US dollar replaced the Pound Sterling as basis for foreign exchange in February 1943 (BCB 1946: 48).

accumulated more debts than ever. For the Amazon as a whole, the overall balance of the rubber boom seems disenchanting:

> "Slavery, practiced in Amazonia for centuries and but one of the manifestations of an unfree labor tradition, survived past the rubber boom, ... That great human trait, adaptation – to new cultures, labor demands, trading opportunities, and politics – allowed some people to prosper and others to simply survive in an unstable environment. Nonetheless, incorporation, violence, slavery, and adaptation took a huge toll on thousands of individuals, people caught by the destructive side of colonialism, capitalism, and nationalism" (Stanfield 1998: xvii).

It is frequently enquired why the rubber boom did not induce a more sustainable, or at least more equitable, socio-economic development. As the rubber economy has been the economic backbone, if not socio-cultural foundation, of northern Bolivia throughout its economic history, this issue shall be dealt with in more detail when synthesizing the effects and prospects of the region's extractive economies (see Chapter 6). What is of importance here, is the immediate impact the post-World War I rubber depression had on the regional economy. An important modification was the relaxation of the patrons' restrictions on agriculture, permitting an increasing number of rubber tappers to grow their own food (CIDOB 1979a: 16, Bakx 1988: 150-2). General statements, as the one cited above, tend to overlook such positive consequences of the crisis. Though representing the weakest section of the production system, dependent rubber tappers evidently benefited from the first rubber crisis as a new production mode emerged. Unlike the old regime in which the production of foodstuffs was discouraged by the patrons, the new regime constituted of subsistence agriculture and collecting Brazil nuts. Both were practiced during the periods when rubber tapping suspended.[265] While a few proprietors clang to the old system, the majority accepted the new conditions as more advantageous to all concerned (Schurz 1925: 225).

The new system followed an agro-extractive calendar (cf. DHV 1993e: 30, Assies 1997: 8-9). Commencing in July and August at the peak of the dry season, new fields were cleared through slash-and-burn. From September to November, rubber was tapped (*fábrico chico*), along with sowing rice, maize, and plantains at the onset of the rainy season. Between December and March, labor was dedicated to the extraction of Brazil nuts at a time when rainfall is highest. Concurrently, manioc was propagated by cuttings, if not sown in April or May. Between February and April, harvesting of rice and maize coincided with the last months of the Brazil nut season. Plantains and manioc provided staples as they are harvested throughout the year. The cycle closed with another tapping period (*fábrico grande*), lasting from April to June/July. Hunting and fishing were further components of the agro-extractive production mode, with the later being chiefly a dry season activity and the former constituting a steady concomitant of forest product extraction (for an overview, see Annex 2).
The agro-extractive cycle in the terms of Assies (1997) became the major production mode of both *barracas* and independent communities for most of the 20th century. In fact, the emergence of independent communities[266] was the most profound effect of Bolivia's first rubber crisis. Initially they were founded in medium and small *barracas* abandoned by those patrons who were lacking the means to maintain the infrastructure and/or to advance the

[265] It needs to be borne in mind that extractive activities were not the sole works to be performed for the patrons. Between the collecting seasons, the dependents were employed on a daily-wage basis (*jornaleo*), encompassing the clearing of tracks and trails, and slashing, burning, sowing, tendering and harvesting the patron's agricultural plot (CIDOB 1979a: 96).

[266] In those years, independent communities (*comunidades libres*) could be distinguished into indigenous communities (*comunidades indígenas*) inhabited by natives who survived the rubber atrocities, and peasant communities (*comunidades campesinas*) with a predominantly non-indigenous or mestizo population.

tappers' provisions on credit. Ex-laborers *de facto* occupied the *barracas* rather than buying the land from their previous employers (Ormachea 1987: 26). This was favored by the Bolivian land law which – like the laws of Peru and the Brazilian states of Acre, Amazonas and Pará – made generous provision for the acquisition of homestead properties (Schurz 1925: 225). Though the structure of the *Casa Suárez* was hardly affected, a growing number of independent rubber tappers and patrons could thus emerge. While Suárez continued to control the remote upriver stretches, the more accessible areas along the Beni and Madre de Dios Rivers became increasingly dominated by smaller properties (see Schurz *et al.* 1925: 288). The laborers such released from debt bondage consequently focussed on small-scale agriculture for their subsistence without ceasing to collect forest products for cash income. They were, however, of such diverse regional and ethno-cultural origin (Ormachea and Fernández 1989: 51) that effective village organization was long hindered. Despite the communities' political, economical, and social autonomy community affairs began to be controlled by few resident families (SNDR 1995b: 26), mimicking the patron system to a certain extent.[267]

The emergence of independent communities in northern Bolivia signified the beginning of a 'dual economy', which otherwise was a typical phenomenon of 19th-century Latin America (Morse 1974: 430). The coexistence of a capital-intense latifundiary *barraca* sector and a *campesino* sector encompassing independent small producers mainly concerned with meeting subsistence needs was to become the decisive feature of the regional economy for the rest of the 20th century.

The bust following the rubber boom in northern Bolivia had the following characteristics:

production of native rubber faces fierce competition from plantation and synthetic rubber

decreased rubber earnings are to some extent offset by income derived from *quina*, Brazil nut, and other NTFPs

the emergence of independent communities on abandoned *barracas* lays the foundation for an independent *campesino* sector and the revitalization of indigenous communities

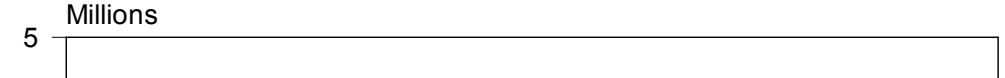
a new agro-extractive production mode on both *barracas* and independent communities combines subsistence agriculture with the extraction of rubber and Brazil nut.

World War II resurgence of the rubber boom, 1941-1945

Throughout the 1930s production levels of Amazonian rubber remained low until World War II caused a resurgence of the boom (see Figure 2-4). Following 1940, a marked revival of rubber production was also noticed in northern Bolivia (Tórrez and Cuellar 1984: 1). The Allies had been cut off from the rubber plantations in Southeast Asia through the expansion of the war into the Asia-Pacific region (Davis 1996: 332). This renewed their interest in native rubber from the Amazon regardless of its higher price.[268] In Bolivia alone, annual production soared to about 4000 tons, little short of the volume produced during the heyday of rubber (Fifer 1970: 135). Bolivia's second rubber boom absorbed not only all the laborers available but demand increased to such an extent that it could not be met by tapping *Hevea* trees alone.

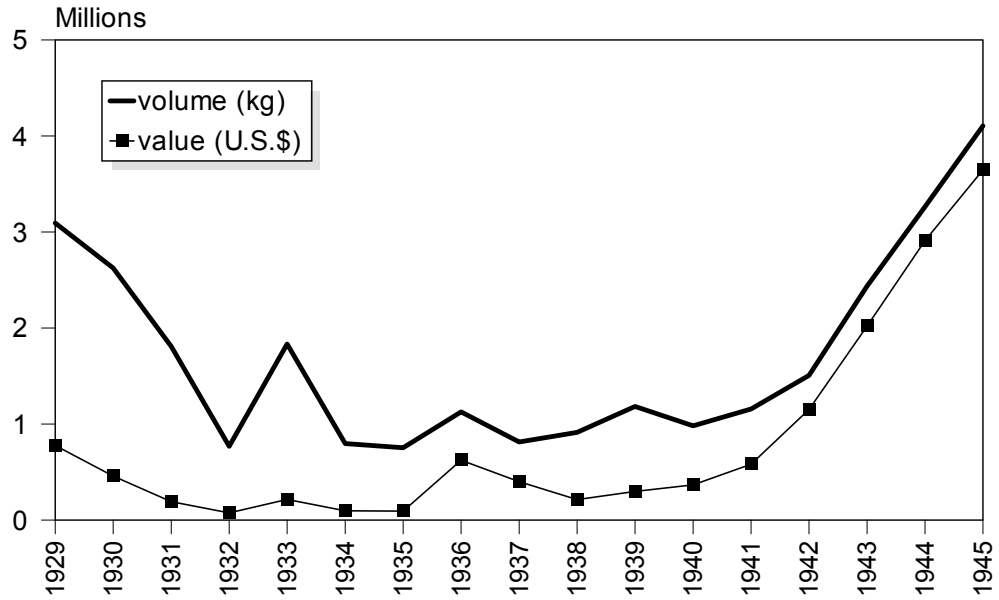
[267] Up to the present day, many independent communities do not display an egalitarian structure, as those who settled first have more access to land and, hence, more economic and political power.

[268] During the war, the average cost across Latin America was US$ 0.64 a pound, compared to US$0.28 for rubber from Ceylon (Davis 1996: 334).



Consequently, itinerant work crews were formed to roam the forests in search of caucho from *Castilla* spp., resuming the fashion of previous collecting expeditions as organized during the first rubber boom (see Fifer 1972: 114).

Figure 2-4 Volume and value of rubber officially exported from Bolivia, 1929-1945.



Source: Based on BCB (1946: 21, 79).

Note: Export values in real prices (converted from Pound Sterling to US dollar).

In the light of increased competition from synthetic and plantation rubber, rubber exports from Bolivia declined significantly throughout the 1930s. Export values reached such a depression that even lowly remunerated activities such as *quina* exploitation and Brazil nut collection appeared more lucrative. The agony of the Bolivian rubber sector was only surpassed when the turmoil caused by World War II boosted the demand for native rubber. Bolivia's second rubber boom, though, was far more ephemeral than the first one, since the boom turned into another bust immediately after the 1945 peace agreements.

Though far from the battlefields, the Second World War had an important bearing on the Amazon. The ups and downs in its extractive economies depicted striking similarities with earlier epochs. The general picture in the war period was that extractive activities other than rubber tapping became less important or were abandoned given the high rubber prices (Hemming 1987). In Bolivia, however, the only market in decline was that of Brazil nut owing to scarce labor and lower demand in the USA. In contrast, along with the burgeoning markets of *Hevea* and *Castilla* rubber, the *quina* market thrived almost as it did about a century earlier (cf. Kernan 1951: 354). The Japanese occupation of Java had brought about a severe shortage of quinine on the side of the Allies, raising the demand for *quina* from South America and inducing the establishment of new *Cinchona* plantations in Africa (Raintree 1999: 2). The dearth of quinine further boosted the research on synthetic antimalarials and, in 1944, the first synthetic quinine alkaloid was produced in a laboratory (ibid.). Next to rubber and *quina* other NTFPs faced with increased demand: during the war and the immediate post-war period, exports of living forest creatures to the USA and feathers of parrots (*pluma de loro*) were flourishing (Peralta, pers. comm.). Another NTFP contributing supplementary

income was cacao or chocolate (*Theobroma cacao* L.), growing abundantly along the major waterways. [269] The missions had left large plantations, in particular at the middle and upper reaches of the Mamoré as well as the Beni River near Puerto Cavinas (cf. Heath 1882: 6-7, Ballivián 1896b: 37). Some of them are maintained in natural forest-like environments and harvested up to the present.

Nicolás Suárez, whose career had already spanned both the rise and collapse of the great rubber boom, was not to experience the rebound in the wake of the Second World War; he died in his eighty-ninth year on 11 January 1940 (Fifer 1970: 145), i.e. a few months short of the phenomenal resurgence of the rubber boom. His death marked the end of an era as "none of the other surviving rubber or ranching houses had developed the scale of the Suárez infrastructure upon which, with all its faults, so many thousands depended ... The Bolivian Oriente has neither produced nor attracted any other comparable driving force on the scale required to come to terms with such isolation and physical difficulty as are found in Pando and Beni" (Fifer 1970: 145-6). As much as rubber left its mark on the economic history of northern Bolivia, as much did Nicolás Suárez.

The impact of World War II on northern Bolivia's can be summarized as follows:

rubber and *quina* experience a second boom, as the Allies lack access to Asian plantations

as labor is shifted to the exploitation of rubber and *quina*, Brazil nut production declines

other NTFPs provide supplementary income.

The second rubber crisis: post-war disintegration of rubber estates, 1946-1973

In the post-war period, Brazil nuts reemerged as important source of income for forest dwellers given the surge of rubber production in Malaysian plantations (Clay 1997a: 261). In response to the renewed drop of rubber prices[270] labor was shifted from rubber to Brazil nut and other NTFPs. In 1947-48, the region's second rubber crisis was most pronounced as alternate sources of income were exceedingly sparse. Brazil nut, for instance, began to play a key role only in the 1950s (see Figure 3-1). Rather than depending on one principal commodity as at the time of the great rubber boom, the post-war period was characterized by exploiting a multitude of NTFPs for cash. Next to rubber, Brazil nut and *quina*, income was derived from wild cacao and pelts of forest animals. The hides of the large caiman (*Caiman yacare*), locally called lagarto, had acquired commercial value in the mid-1940s (Jones 1985: 13).[271] These were supplemented by hides of the black caiman (*Melanosuchus niger*), skins of

[269] Cacao is harvested from January to March, coinciding with the Brazil nut harvest, such that labor released through the contracting market for Brazil nuts could be reallocated to the exploitation of cacao. Cacao, originating from Central America, was brought to Bolivia by the missions (Boero 1978: 494). Accordingly, an account on the exploration of the upper and middle reaches of the Beni River in 1827 stated that "the cacao is to be found wild in many places, in others it is cultivated; in either case it is superior to any brought to the city of La Paz" (Herrara 1835: 99).

[270] During World War I and II, one pound of rubber from northern Bolivia sold at US$0.55 and US$0.49, respectively; between the wars prices dropped to a record low of US$0.05 per lb.; post-World War II prices were at US$0.35/lb. in 1955, US$0.15/lb. in 1963 and US$0.23/lb. in 1968 (Fifer 1972: 153).

[271] In later years, it would be succeeded by the pelts of river otter or londra (*Pteronura brasiliensis*), lowland felines and, in the early 1980s, peccary (*Tayassu* spp.) (ibid.).

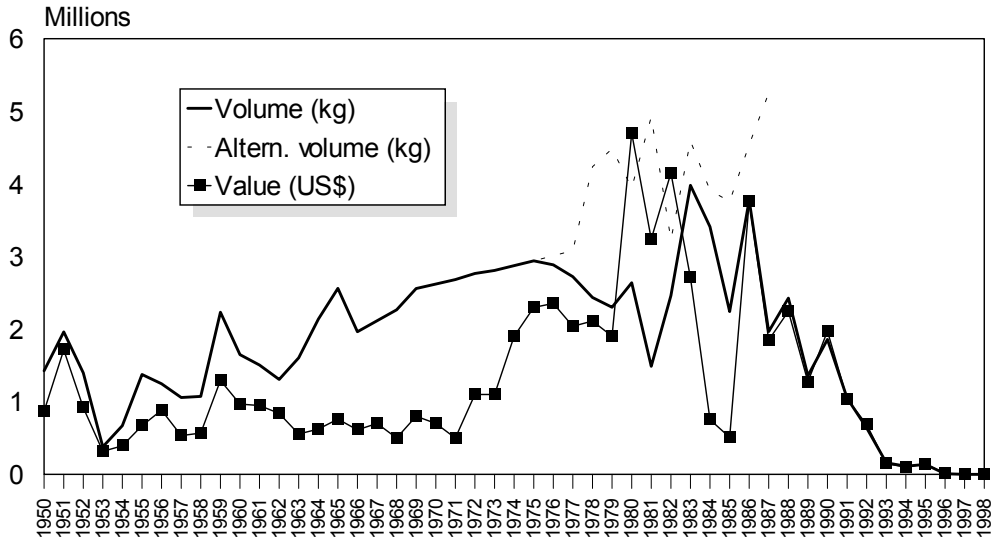
jaguar[272] (*Panthera onca*) and tigresillo (*Felis pardalis*), which were subjected to increased demand in particular from 1949 to 1953 when GARMA, an Argentinean enterprise, bought up virtually all output from northern Bolivia (Peralta, pers. comm.).[273] In the 1960s, a market evolved along the Brazilian border for the roots of ipecacuanha (*Cephaëlis ipecacuanha* (Brotero) A. Richard), a medicinal plant with a variety of uses (see Fifer 1972: 155). Moreover, the shells, eggs, and meat of turtles always generated supplementary income.[274] Though the combined effect of various NTFPs proved a viable response to the rubber crisis, the need for rubber earnings was not satisfied in Bolivia (see Figure 2-5), nor elsewhere in the Amazon. In the late 1960s, 5000 rubber tappers remained in the Department of Pando alone (Terrazas *et al.* 1970: 50), at a time when rubber export values had reached a historic low.

[272] Jaguar pelts were extremely valuable by the end of the 1950s (Jones 1985: 13). They continued to be so throughout the 1970 when a jaguar skin fetched up to $b3000 (CIDOB 1979a: 101). In later years, traders paid up to $b5000 for the pelt of a jaguar (locally called *tigre*), as I was told by several ex-*barraca* residents. Alternatively, the hunters received a *salón*, i.e. a rifle of caliber 22 (Wentzel 1986: 15), upon delivery of a pelt to the respective patron.

[273] According to the Dirección Departamental de Estadística, the following numbers of skins were exported from northern Bolivia in 1967: large caiman (180,000), black caiman (11,500), various felines (*gatos*: 9480), taitetú (15,000), jaguar (590), giant fish otter (795), and *capibara* (1000); accounting for clandestine trade, these numbers are believed to have risen to five times as much in the 1970s (Carvalho 1980: 62, 65). Increased exploitation of other forest products such as timber and animal skins in the wake of the early 20th century rubber decline is likewise reported from the Brazilian Amazon (Allegretti 1990: 255).

[274] Since times immemorial, the turtles' eggs and meat have been an important dietary supplement for Amazonian forest dwellers (see Schurz 1925: 220). First signs that these were overexploited date back to the mid-19th century when oil hunters plied up and down the upper Madeira River: "We see millions of eggs destroyed by oil hunters, who search all the islands, and drive to the turtles from one to the other" (Gibbon 1854: 304-5). In the late 19th-century, river turtles were still caught in great numbers, being conserved in small ponds to have them available whenever the need for meat arose (Ballivián 1890a: 32). While in those years turtle eggs literally covered the banks of the Orton River (Ballivián 1890b: 29), turtles are a rather rare sight today. This does not come as a surprise, for ten to twelve men caught between 300 and 400 turtles a night for their meat, in addition to the "fabulous quantities" of turtle eggs certain indigenous peoples collected for their principal food between August and October (Armentia 1883: 22).

Figure 2-5 Volume and value of rubber officially exported from Bolivia, 1950-1998.



Source: Based on Comité Cívico de Riberalta (1972), López (1993), CNF (1997), Banco Santa Cruz (1998) and Pacheco (1998).

Note: Actual output levels were probably around fifty percent up the official data, as around one third of the total production used to be illicitly exported to Brazil and Peru. This is partly reflected in the dotted line, providing an alternative estimate of the volume produced between 1976 and 1987 (Weiss *et al.* 1989: 3.9).

Similar to the first rubber crisis ensuing the great rubber boom, Bolivia's post-war rubber crisis rooted in low rubber prices rather than in reduced output (Figure 2-5Figure 2-6). By 1973, official export values hardly exceeded US$1 million in spite of raised production. The region consequently began to rely on Brazil nut exports as a second, and increasingly principal, mainstay of the extractive economy (see Figure 3-1).[275] The emergence of a third rubber boom and the subsequent final decline of Bolivian rubber trade, as depicted in Figure 2-5Figure 2-5, will be dealt with in the Sections 0 and 0.

Concomitant to the rubber decline and the Brazil nut rise, *quina* production decreased in the post-war period as a consequence of lower prices.[276] Nonetheless, the National Quinine Factory still produced appreciable quantities of quinine sulfate in the immediate post-war period as all competing factories in South America had closed down (Pardo 1951: 163-8, 173). As late as the 1970s, Bolivia produced an estimated 100 metric tons of Peruvian bark a year (FAO 1981: 22, 45). The area of production was concentrated in the Yungas around Caranavi where bark collection in the wild was so devastating that raw material supplies for the state-owned factory in La Paz[277] began to be threatened; to address the foreseen shortage, plantations of *Cinchona ledgeriana* were established near Caranavi in the 1970s (Stolz 1986:

[275] Contrary to popular belief, Brazil nut had assumed a leading role in northern Bolivia long before the final rubber decline. Referring to the early 1970s, Fifer (1972: 151) held: "Although the rubber industry is very small indeed, it still remains, with Brazil nuts, the chief means of livelihood ... "

[276] Prices of quinine sulfate had peaked during World War at US$65 per kg, dropping to US$50 at the end of the war and further to US$10 by 1951; accordingly foreign exchange earnings decreased from US$ 203,750 in 1946 to US$13,240 in 1949 (Pardo 1951: 168, 173).

[277] The factory's capacity of approximately 250 tons a year was utilized only at 30-50% during most of the years (Stolz 1986: 146). Given that the output is only one to six percent of the raw material input (see Pardo 1951: 171), the factory produced anything between 0.75 and 7.5 tons of quinine sulfate a year.

146). But given the unfavorable terms of trade in the subsequent years, the state-owned factory closed down in 1982 (ibid.) and, consequently, Bolivian exports of *quina* or quinine sulfate dropped close to nil.[278]

Along with Bolivia's second rubber crisis the Suárez empire disintegrated. Within a few years' time the Suárez fortune was gone[279], and Cachuela Esperanza saw itself reduced to a disarticulated, forgotten and melancholic hamlet whose erstwhile fame vanished like the spray from its rapids. The region as a whole would have faced with misfortune, had the definite elimination of rubber production not been prevented by adopting protective policies. They became manifest in a rubber price support scheme, constituting part of the 1958 Treaty of Roboré between Bolivia and Brazil.[280] The inter-government agreement commissioned the Brazilian *Banco de Crédito da Amazônia* to grant financial assistance to rubber products from both Bolivia and Brazil (Barrau cited in Pacheco 1992: 255). The ensuing intrusion of Brazilian capital was criticized for reducing northern Bolivia to a "marginal appendix of the Brazilian economy" (Pacheco 1992: 223; my trans.). But thanks to the Brazilian subsidies and further trade concessions Bolivian rubber production was kept alive. Annual exports recovered in the years following the National Revolution of 1952 (see Figure 2-5Figure 2-5), but prices were never again to reach the level of the great rubber boom.

Soon after the death of Nicolás Suárez his land property had been split up or seized by various administrators, managers, and others (Ormachea and Fernández 1989: 10). This lead to the fragmentation of the monopolized forest concessions (Pacheco 1992: 122) and allowed a new kind of patrons to emerge. Their way of governing the *barracas* was often more oppressive than that of Suárez and at the same time less efficient: written contracts were replaced by verbal agreements, the systematic accounting of the tappers' balances vanished, and the complementary services once provided by the large rubber houses fell into oblivion (Pacheco 1991: 8). The *noveau riche* among the large patrons tended to leave the *barracas* to live a glamorous life in town, above all in Riberalta. This emerging class of large and medium-scale entrepreneurs is vividly described by Letellier:

> "In Riberalta everything is made in grand style or it is not made at all. The industrial cast is powerful, fortifying, visionary, reckless. The industrialists rise towards the economic zenith as rapidly as they noisily collapse, and they fall like the soldiers in a fight without forts" (1964: 40; my trans.).

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[278] Nowadays, virtually all quinine consumed worldwide originates from *Cinchona* plantations, in particular those of *C. succirubra* [*C. pubescens*] and *C. ledgeriana;* producing 5-10 thousand metric tons of bark per year (Bruneton 1995, cited in Raintree 1999: 3), they yield between 300 and 500 metric tons of alkaloids, about 60-85% of which is quinine (Braje 1999: 1). Zaire has become the top supplier, followed by Indonesia, India, Cameroon, Kenya, Burundi and, to a very limited extent, Peru, Bolivia, and Ecuador (Raintree 1999: 3).

[279] The fortune was consumed in the twinkle of an eye due to "disagreement about the terms and the authenticity of the will, endless litigation among the multitude of quarrelling relatives, unskilled administration and profligate extravagance" (Fifer 1970: 146). At the final official dissolution of *Suárez & Co. Ltd.* in 1961, the assets of a company once valued at a reputed £10 million were found to be a mere £1500 (ibid.).

[280] The rubber-related regulations were annexed in the *Convenio de Comercio Interregional* and further specified in the *Nota Reversal No. 12* dating from 12 March and 29 March 1958, respectively (Terrazas *et al.* 1970: 40). Export facilitation granted to Bolivia comprised the following products from the Departments of Beni, Pando, and Santa Cruz: rubber, Brazil nut, cattle, gypsum (*yeso*), timber, Peruvian bark, salt-dried meat, and salt (ibid.: 47). For the complete text of the *Nota Reversal No. 12*, see Pacheco (1992: 255-6). In fact, the Brazilian government had passed a first rubber defense law as early as 1912, realizing that the only solution for the rubber industry in the Amazon was to compete effectively with Asiatic plantation rubber (Melby 1942: 463).

Rather than corporal punishment[281], these patrons employed subtle means to ensure the laborers' services. These included higher reimbursement for certain rubber tappers, privileges like extra advances at the end of the year or assistance in case of illness, and *compadrazgo* (CIDOB 1979a: 109-10).[282] Other patrons turned into itinerant traders (*marreteros*), abandoning their dependents and seeking to take advantage of other tappers by buying their rubber at nominal rates and selling overpriced merchandise (Terrazas *et al.* 1970: 36).[283] One of the most salient features of the post-war fragmentation of rubber estates, however, was the emergence of small patrons. This type of patron occupied small-scale *barracas* and recruited labor only to a limited extent. In general, the fragmentation of the pre-war *barraca* system induced a more intrinsic web of commercial exchange reflected in the multiplication of intermediaries and independent traders (Pacheco 1992: 223). Whatever the nature of the new patron-client and trader-tapper relationships, the dependent *siringueros* remained at the bottom of the socio-political hierarchy, with many of them being simply transferred from one patron to another.

In addition to the changes at *barraca* level, the production system as a whole had to be reorganized for British capital was withdrawn from the extractive economy (Pacheco 1992: 110). But given the region's ecological constraints, the lack of a viable communication network[284], and the notorious political neglect, the scope for profound changes was limited. On the whole, patterns of human and natural resource exploitation went unchallenged:

> "... the rivers are 'rubber rivers' still. But while the old patterns of activity are essentially the same, their scale and intensity have once again progressively declined. Indeed, the very persistence of these traditional activities, weakened as they are, serves to emphasise the general stagnation and lack of flexibility in the economy of the Norte [i.e., northern Bolivia]. It is a region which, doubtful of a future, dreams of its past" (Fifer 1972: 152).

Only the combined exploitation of rubber and Brazil nut could maintain a certain cash flow in the region, whereby the extractive economy became increasingly dependent on Brazilian capital as a consequence of the Roboré Treaty. At the same time, a new balance emerged between enterprise-run *barracas* (*barracas empresariales*) and those controlled by patrons (*barracas patronales*) (see CIDOB 1979a: 94).[285] Unlike the pre-war period, the latter constituted the vast majority of estates. In the 1970s, enterprises such as *Hecker Hermanos* – the successors of *Seiler & Cía.*[286] – and the state-owned *Corporación Boliviana de Fomento* (CBF) differed from patron-controlled *barracas* in that they displayed high investment along with a higher degree of diversification and labor division (ibid.). In addition to the rubber

[281] While corporal punishment predominated on the *barracas* during the epoch of Nicolás Suárez, only isolated incidents were reported in the post-war period; in this connection the *barracas* on the Yata and Benicito Rivers acquired the worst reputation (CIDOB 1979a: 109).

[282] An effective disincentive to disobeying behavior was to limit the provision of foodstuffs and other basic necessities to the dependents (ibid.).

[283] In 1969, for example, these traders paid $b1.50/kg of rubber to the tappers but sold at $b5.25 in the Brazilian frontier market; in addition, prices of their merchandise were 30% up those in the region's towns (ibid.: 37).

[284] For example, the hundred-kilometer all-weather dirt road between Riberalta and Guayaramerín was completed as late as 1968; before the completion of this road, neither Bolivian nor Brazilian produce reached to Riberalta in noteworthy quantities such that its living costs had been eight to ten times those in the Bolivian highlands (Fifer 1972: 156-7).

[285] The most powerful firms in the 1960s were *Seiler & Cía.*, *Sonnenschein Hermanos*, *Durán Aponte & Cía*, Edmundo Alpire Durán, Pedro Gvozdanovic, Roberto Plattner, Miguel Rojas, Germán Aue, Hermes Ribera, among others (Letellier 1964: 40).

[286] In the late 1960s, *Seiler & Cía.* alone accounted for an annual rubber production of 1000 metric tons, constituting the region's largest rubber producer (Fifer 1972: 153). In addition, the firm annually exported some 800 tons of in-shell Brazil nuts along with 600 tons of shelled nuts (ibid.: 154).

tappers, enterprise-run *barracas* and some estates controlled by large patrons presented the following labor division (CIDOB 1979a: 100-1):

overseers (*capataces*), looking after the *barracas*' organization and controlling labor

carriers (*comboyeros* or *arrieros*), ensuring the smooth flow of raw material from the forest-based rubber centers to the *barracas*' transshipment points on mules or donkeys

tree finders (*rumbeadores*), responsible for detecting rubber (or Brazil nut) trees without exploiting them

contractors (*contratistas*), in charge of specific works such as timber extraction for the construction of houses or boats

hunters (*cazadores*), procuring hides and skins of forest animals; employed only by some of the large patrons.

Reimbursement for the various activities differed according to the type of work. Only the overseers received a monthly salary, while the carriers and tree finders were reimbursed with daily wages. Contractors, hunters, and rubber tappers were paid on a piecework basis. Unlike the boom period when most rubber tappers received monthly wages, the new structure thus treated most *barraca* laborers as people working on their own account (*por cuenta propia*) rather than as employed laborers.[287] A further distinctive feature was the existence of processing plants for Brazil nut as operated by CBF in Blanca Flor and *Hecker Hermanos* in Conquista and Fortaleza. Their predominantly female laborers were likewise treated as occasional labor force. In addition to the income in cash and/or kind, most *barraca* laborers were allowed to work their own agricultural plot, provided they dedicated not more than 15 days to slash-and-burn (CIDOB 1979a: 97).[288]

The second rubber crisis not only modified the terms for dependent rubber tappers but also for independent producers. Like in the pre-war period, the latter benefited from the disintegration of the *barraca* sector in the wake of a rubber crisis. Spurred by the Agrarian Reform in 1953, independent communities emerged on *barracas* not claimed by former Suárez employees, or in areas previously not occupied by a patron (Pacheco 1992: 118). These areas were poor in rubber and Brazil nut and, more seriously, the new communities suffered from a lack of schools, health posts, and institutional support. In their initial phase, more than two-thirds of the independent communities were inhabited by not more than 10 families each (CEDLA 1986, cited in Ormachea and Fernández 1989: 55). This impeded the emergence of effective village organizations and cooperative commercialization of agricultural and forest products.

The Agrarian Reform of 1953 granted the producers in independent communities two *estradas* each (Serrano 1993: 44).[289] The reform provided the base for small land property of independent producers but it hardly affected large landowners (Ormachea and Fernández 1989: 28), at least as far as northern Bolivia was concerned. Paradoxically, the region's notoriously weak foundation of legal land property helped the rubber patrons defend their land claims: in the absence of legal land titles, *de facto* landowners could simply not be

[287] This was a general trend in Amazonia's rubber economy, as "only after the boom, when rubber prices had plummeted to a fraction of their boom levels and agriculture had increased in economic importance, did share tapping and piece-rate arrangements became [*sic*] more common" (Coomes and Barham 1994: 246).

[288] This time span allows to clear a plot of one to one and a half hectares, sufficient to meet the subsistence needs of an average family.

[289] In 1954, a supplement to the law on the Agrarian Reform (*Decreto Ley Nº* 3615) conceded a maximum of three rubber trails to each rubber tapper (Serrano 1993: 134).

expropriated.[290] Another paradox referred to the maximum size of a landholding that was stipulated only for large and intermediate holdings but not for small land property; some villagers thus gained access to comparatively large parcels on ex-*barracas* (Ormachea and Fernández 1989: 29) though only a minority managed to obtain legal property titles.[291] Up to the present day, the land is controlled by *de facto* rather than *de jure* landowners.[292]

The chief characteristics of Bolivia's second rubber crisis were:

the war situation reverses: Brazil nut starts its career while rubber and *quina* decline

further NTFPs generate supplementary income

the Suárez empire disintegrates, bringing about a new layer of patrons and providing an additional boost to the foundation of independent communities

the power structure on the *barracas* remains largely untouched but the labor regime gradually shifts from stable patron-client relationships to less permanent employer-laborer contracts

the new distribution of land, or the reorganization of access to the forest resources, take place in a legal void, benefiting large and intermediate landowners.

Ephemeral rubber boom in the wake of the oil crises, 1974-1983

As unexpected as the previous booms had hit northern Bolivia, as sudden soared the demand for native rubber in the wake of the 1973 and 1979 oil shocks.[293] These caused a world economic squeeze that was felt "in a number of peripheral areas ... in the form of acute famines, which cleared some rural zones of producers, forcing many of the survivors into a marginalized existence in urban areas" (Wallerstein 1984: 110). Not so in northern Bolivia, as increased demand for native rubber provided an incentive to remain in the countryside to both dependent and independent rubber producers. In anticipation of the renewed price hike, a

[290] Paradox effects of an agrarian reform are also reported from Peru: in the wake of the successive reforms of the 1960s, peasant enterprises were deprived of the labor power necessary for cultivation when land became available as a result of expropriating the landlord class; by denying sufficient capital inputs for mechanisation yet simultaneuously providing low-interest credit to better-off peasants, the Peruvian state permitted them to extend and intensify their hold over poor peasants by means of debt bondage (Brass 1983: 368).

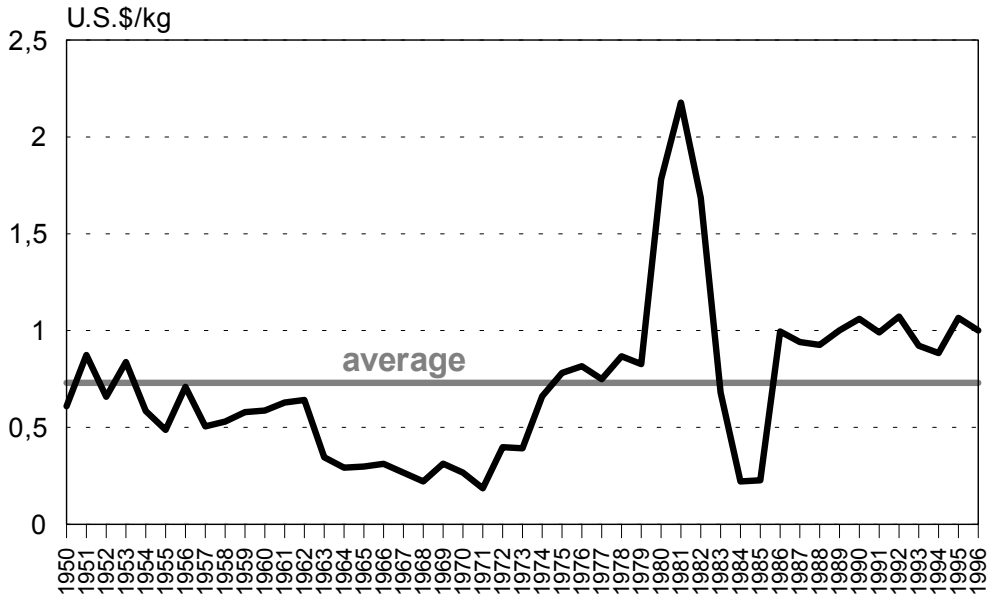
[291] "Few lands of the Oriente were titled prior to 1953 [that is, prior to the Agrarian Reform], but were instead, from a national jural standpoint, 'vacant' lands (*baldíos*) used by ranchers, estate operators, and peasants at the sufferance of the State. At the regional level, 'ownership' of such lands was validated through possession, or use" (Jones 1985: 24-5).

[292] During a workshop on "Land Tenure and Juridical Security of Land in the Bolivian Amazon" organized in Riberalta in June 1998 by the Viceministry of Indigenous Affairs and Native Peoples (VAIPO), the Superintendence of Agriculture and the National Institute of Land Reform (INRA), the director of the Chamber of Exporters of northern Bolivia (CADEXNOR) admitted that virtually none of its members, many of whom occupy vast tracts of forest to extract Brazil nuts, palm hearts or timber, has legal land titles. Similarly, only a handful of independent communities out of a total of several hundreds was said to be in the position to base the land claims on legal documents. A similar situation is encountered in the adjacent Brazilian state of Acre, where "the rights of rubber tappers and other small farmers to the land they occupied came from long-standing possession rather than formal property titles" (Keck 1995: 412).

[293] "In 1973 oil price rises became, for the first time, economically and politically possible in large part because the global rise of industrial production entailed a vast increase in demand for current energy production. This overproduction in turn promoted competition among the core powers, thereby limiting their economic and military bargaining power. OPEC simply capitalized on this situation" (Wallerstein 1984: 61).

laminating plant (*laminadora*) had been operating in Riberalta since 1972.[294] The state-run factory, which would absorb up to half the domestic rubber output[295], aimed at producing high quality rubber sheets. As long as rising oil prices translated into higher prices for native rubber, this proved successful an undertaking: rubber prices in New York quadrupled between 1972 and 1980[296] – but fell in 1981 and 1982 – and rose again in 1983 (IRSG 1983: 47, cited in Romanoff 1992: 134). Oscillation of rubber prices in the world market found its equivalent in northern Bolivia where price hikes and slumps followed the international trend delayed by some months (Figure 2-6).

Figure 2-6 Mean export prices of Bolivian rubber, 1950-1996.



Source: Own elaboration based on Comité Cívico de Riberalta (1972), Banco Santa Cruz (1998), CNF (1998) and Pacheco (1992, 1998).

Note: Real prices of rubber, not adjusted for inflation.

By the early 1970s, mean export prices of Bolivian rubber were subjected to a steady decline. During this second crisis rubber production dropped to pre-war levels. Throughout the 1950s and 1960s official export values of Bolivian rubber averaged US$0.8 million per year, soaring to US$1.6 million during the 1970s. Doubled export earnings from rubber owed to the price effect of the first oil crisis in 1973 and, in particular, to that of the second oil shock in 1979. Mean rubber prices culminated in 1981 when around US$2/kg were paid for the finest quality – RSS-1 (Ribbed Smoked Sheets) (Weiss *et al.* 1989: 4) – which the state-run rubber factory produced from the best raw material available (locally called *goma fina*). Though rubber prices declined drastically by the mid-1980s, mean export values reached US$2.7 million per year in the period 1980-1985.

The third rubber boom in the 20th century became manifest both in Bolivia and Brazil. In 1982, Brazil produced 33,000 metric tons of rubber (Romanoff 1992: 134), falling little short

[294] Though established in 1968, the plant became functional only in 1972 when it collected and processed rubber for the first time (Salas 1987: 13).

[295] The rubber plant had a processing capacity of 2700 metric tons of natural rubber a year (Tórrez and Cuellar 1984: 3, Weiss *et al.* 1988: 20). *Hecker Hermanos* were the single largest supplier of crude rubber in the late 1970s and early 1980s, producing around 500 tons of rubber a year (cf. Romanoff 1992: 124).

[296] Oil prices had quadrupled already by the end of 1973 (Dean 1995: 294).

of the 1912 peak of 38,000 tons during the great rubber boom (Schurz *et al.* 1925: 9). However, the days of the sole dominance of rubber had long been gone. The experience of two rubber booms earlier that century had taught the stakeholders of the rubber economy that booms tend to be succeeded by periods of depression. For this reason, there were no labor shifts of the magnitude observed during earlier boom or bust cycles. Brazil nut remained equally important as rubber, and other NTFPs continued to be exploited as well. The trade of hides and skins, though, entered its final phase when increased government intervention rendered the illegal activities ever more difficult. Nonetheless, local-level trade of NTFPs derived from forest animals, such as the meat of deer, tapir, peccary, or wild fowl, along with caiman oil (*aceite de caimán*) and the shell of taitetú[297] (*casco de taitetú*), continued to play a role. At the same time, the exploitation of copaiba from *Copaifera* spp.[298] experienced a certain revival.[299] Exploited in particular along the Yata River, the trees were felled in order to extract the oleoresin in a fashion similar to the extraction of caucho from *Castilla ulei*. Though demand never reached importance at regional level, copaiba provided a supplementary income on a local scale.

The condensed effect of northern Bolivia's third rubber boom was:

an upsurge in rubber export values along with increased domestic processing

a recalling of the region's economic history without ceasing to exploit other NTFPs.

The third rubber crisis: final collapse of rubber trade, 1984-1995

The resurgence of Bolivian rubber trade in the late 1970s and early 1980s proved to be as ephemeral as the short-lived rubber boom during World War II. In early 1984, Bolivian producers were still enthusiastic about the seemingly unlimited rise in demand for their rubber and anticipated a further hike in prices[300] (see Tórrez and Cuellar 1984). By 1985, however, the world economy recovered from the repercussions of the second oil crisis and the decreasing demand for native rubber began to claim its toll in Bolivia. In addition to the contracting rubber market, Bolivia was hit by a severe economic and monetary crisis, commencing in 1980 and culminating in 1984-85.[301] The official exchange rate of the Bolivian *peso* ($b) against the US dollar was highly overvalued, stimulating the emergence of a parallel market that offered far lower rates. Such overvaluation had a twofold effect: imports were indirectly subsidized, while exports *de facto* suffered from an additional tax; legal exports of agricultural and forest products were effectively discouraged, resulting in substantial contraband of products sold at the unofficial parallel rate (Pacheco 1998: 206).

The exact magnitude of illicit trade in rubber is unknown but it can be approached by comparing estimates of the total production with official export statistics. For the period

[297] Taitetú refers to *Tayassu tajacu* or *Pecari tajacu* (Rumiz 1999: 6, 8).
[298] Typically, copaiba is extracted from *Copaifera langsdorfii* Desf. (synonymous with *Copaifera sellowii* Hayne and *Copaifera nitida* Hayne) or from *Copaifera duckei* Dwyer (see Homma 1994: 48); other species exploited for its oleoresin are *Copaifera reticulata* Ducke (ZONISIG 1997: 1997: 58) and *Copaifera multijuga* Hayne.
[299] As far back as the early rubber epoch, indigenous tappers had combined the extraction of copaiba with rubber exploitation (Ballivián 1890a: 33).
[300] In mid-1984, $b4400/kg, equivalent to US$1.98, were paid for Bolivian rubber in the world market (Tórrez and Cuellar 1984: 3).
[301] The crisis was outstanding in South America, as "Bolivia's economic debacle in this period was striking even in comparison with the poor performance of Bolivia's neighbors" (Sachs 1990: 159).

1980-1987, mean annual rubber production in northern Bolivia was estimated at around 4200 metric tons (see Tórrez and Cuellar 1984: 3, Salas 1987: 14, Weiss *et al.* 1989: 3.21)[302], compared to an official export volume of 2746 metric tons. Taking into account that domestic consumption of Bolivian rubber did not exceed five percent (Comité Cívico de Riberalta 1972: 6, Tórrez and Cuellar 1984: 3, Weiss *et al.* 1989: 3.21), these figures suggest that about one third of the total production was illicitly exported. Interpretation of export statistics has also to allow for the fact that they hardly distinguish between crude rubber and laminated rubber (*goma laminada*).[303]

The regional economy of northern Bolivia had long lingered in a state seemingly independent from developments at national level. But given its intrinsic dependence on capital flows from outside the region and the increased integration into the national economy by the 1980s, northern Bolivia's extractive economy was not exempted from the country's general crisis. As early as 1981, Bolivia's economic conditions had aggravated by devaluing the national currency. Further devaluations in 1983 and 1984 had prompted a three-week general strike throughout the country (Morales 1992: 101). In 1984 and 1985, the economic crisis culminated in a hyperinflation that rose up to 25,000 percent between January and August 1985 (Nohlen and Mayorga 1992: 190)[304]. As the *peso* lost most of its exchange value against the US dollar, real wages dropped to a fourth or fifth of their former value (Pampuch and Echalar 1993: 133-4), even though "working and peasant classes were already facing starvation wages" (Morales 1992: 157).[305]

Bolivia's economic and inflationary crisis and the resulting decline of purchasing power finally hit patrons, intermediaries, and rubber tappers alike. The latter could no longer afford to pay the ever increasing prices for the provisions on the *barracas*. In view of the rampant inflation, the intermediaries ran the risk to be deprived of any profit when purchasing rubber in the forest at a rate that was worth much less upon their arrival in town.[306] Many patrons, on the other hand, could not retain their payments to the tappers, nor pay off the credits advanced in provisions by the traders. As a result, many tappers began to leave the *barracas* in search of a new living in an independent community or in one of the region's three urban centers (see sections 4.3 and 4.4). Deprived of the labor force and often heavily indebted, many patrons had to abandon their estates, thus paving the way for the foundation of further independent communities.

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[302] In 'normal' years, i.e. those not affected by a general economic crisis, Bolivia's rubber production was estimated at ranging between 4500 and 5000 metric tons; of the estimated 7000 tons produced in 1987, 25% need to be deducted (Weiss *et al.* 1988: 15-7).

[303] In 1983, the Riberalta-based laminating plant processed 2300 tons of crude rubber into 713 tons of rubber sheets (*goma laminada*) (Tórrez and Cuellar 1984: 3), suggesting an input-output ratio of 3.2:1. As various accounts do not explicitly mention whether they refer to crude rubber or laminated rubber, figures on total rubber production are subject to a great deal of variation.

[304] In fact, Bolivia experienced the highest inflation in the history of Latin America between early 1982 and late 1985 (Morales 1988: 307). "The economic depression and staggering external public debt of US$5.8 billion contracted by 1988 were rooted in three causes: the structural crisis of the Bolivian economy, the rapid increase in interest rates in the industrialized nations, and the global economic recession" (Morales 1992: 156).

[305] A worker's salary averaged around US$50 - US$35 a month between 1985 and 1989 (ibid.).

[306] In those years, rubber producers preferred to sell to Brazilian traders who paid cash rather than to deliver to the rubber plant in Riberalta where payments were delayed by up to one month (Weiss *et al.* 1989: 3.19). For more details of the effects inflation had on extractive economies, see Section 2.10.3.

Along with the adverse macroeconomic climate in the mid-1980s, the final decline[307] of Bolivian rubber was brought about by the abrogation of Brazilian rubber subsidies. Though reaffirmed in the 1975 Geisel-Banzer agreement (Fernández and Pacheco 1990: 7), the preference scheme was withdrawn by the Brazil government in 1986 because of structural adjustment considerations.[308] For twenty-eight years Bolivia not only had benefited from the scheme but also assumed a high dependence on it given that 95 percent of its rubber output were exported to Brazil (see Weiss *et al.* 1989: 2).[309] Deprived of state protection, native rubber was left to the forces of the world market in which it could not compete with the far cheaper rubber[310] from Southeast Asian plantations or the emerging plantations in non-Amazonian Brazil. By the end of the 1980s, Bolivia – once the world's largest rubber producer[311] – had turned into a net-importer of rubber which, ironically, had to rely on the inexpensive rubber from its Asian competitors (Weiss *et al.* 1989: 3.6). By the mid-1990s Bolivian rubber production gradually faded away (see Figure 2-5).[312] Contrary to popular belief, Bolivia's rubber collapse was the consequence of reduced demand rather than of low prices. By the end of 1988, for instance, demand had dropped by about a half as a consequence of the close down of the Riberalta-based laminating plant. Moreover, prices paid to the tappers were truly low only around 1985 but recovered in the late 1980s and early 1990s, as evidence from interviews with ex-rubber tappers suggest. This is confirmed by the remarkably stable export prices since 1986, as depicted in Figure 2-6.[313]

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[307] The decline of Bolivian rubber production is regarded as final because of the high costs of rubber extraction from natural forests and the large-scale cultivation of rubber in Brazil. But time and again there are negotiations on a potential revival of rubber production in northern Bolivia. These are nurtured by *barraca* owners whose interest in resuming rubber production is comprehensible. However, two factors impede the revitalization: first, costs to rehabilitate the necessary infrastructure on the *barracas* are prohibitive. Project proposals formulated by the rubber producers, albeit exaggerated for political reasons, suggest investment costs of US$30-40 million. Second, in order to provide an incentive for urban-based ex-rubber tappers to reestablish on the *barracas*, they were to be paid rubber prices exceeding those prior to the collapse. This, however, is not realistic as "in recent years, native rubber and even that produced from plantations in the Amazon region have become uncompetitive with the plantation rubber production centers in the south of Brazil and internationally" (Pastore 1996: 13). Unless a renewed interest in native rubber – e.g., based on its alleged supremacy over plantation rubber – emerges, the perspectives of native rubber production in both Bolivia and Brazil remain bleak. In contrast, long-term prospects of natural rubber produced in plantations are far better given that the price of synthetic rubber will increase as world petroleum supplies diminish (Prance and Prance 1993: 57).

[308] While rubber subsidies were suspended in 1986, institutional adjustments were soon to follow. By the same year, rubber plants had been established in Acre and Rondônia, thus reinforcing the competition for the Riberalta-based plant (Salas 1987: 12). In 1988, staff and budget of the Brazilian Superintendence for Rubber Development (SUDHEVEA), responsible for rubber marketing and promotion, were drastically reduced (Fearnside 1989: 391). In February 1989, the agency was merged with others agencies in the newly created Brazilian Institute of Environment and Renewable Natural Resources (IBAMA).

[309] Though paid in cruzeiros, Bolivian rubber thus fetched a price equivalent to 2.5 times that of the international market (Justiniano 1982: 5).

[310] The Brazilian rubber price support scheme highly inflated Bolivian rubber prices. As long as it was effective, rubber tapped in the vicinity of Riberalta would have sold at two times the price of Malaysian plantation rubber, had this have been shipped around the globe, disembarked in one of the Pacific ports, and transported per truck across the Andes the lengthy way to Riberalta.

[311] Bolivia's leading role as the world's largest rubber producer was confined to the year 1899 when Acre's production was still accredited to Bolivia.

[312] Even though the rubber price support scheme had been crucial to uphold native rubber production in both Bolivia and Brazil, its withdrawal did not immediately result in a market collapse as Brazil kept on being dependent on rubber imports. In 1987, for example, Brazilian consumption amounted to 115,400 metric tons, out of which only 26,600 metric tons had been produced domestically, while the remaining 88,800 metric tons had to be imported (Weiss *et al.* 1989: 3), *inter alia* from Bolivian forests.

[313] In the late 1980s, Bolivian rubber continued to be chiefly exported to Brazil. International prices for natural rubber had already been stabilized through the 1979 and 1987 International Rubber Agreements (INRA) when

Bolivia's third and presumably last rubber crisis had severe repercussions not only on the modes of production in the regional economy but also on the spatial distribution of the regional population. These are a central topic of this thesis and will be dealt with in detail in the Chapters 3 through 6. Suffice it to say here that the rubber decline was offset by a boom in the Brazil nut and, to a lesser extent, the palm heart industries. Unlike previous rubber crises, no parallel developments could be observed in the *quina* economy whose demise manifested about a decade earlier. However, in recent years natural quinine extracted from *Cinchona* bark as well as the use of the natural bark tea and/or bark extracts are making a comeback in the management and treatment of malaria. Scientists found that strains of drug-resistant malaria can still be treated effectively with natural quinine and/or *Cinchona* bark extracts (Raintree 1999: 3). It remains to be seen whether this results in increased *Cinchona* use at merely local level or whether new export opportunities will arise for the original producers.

The final phase of Bolivia's rubber economy can be summarized as follows:

the general economic crisis of Bolivia in the first half of the 1980s has a negative impact on its rubber industry, aggravated by the abrogation of Brazilian rubber subsidies in 1986

adverse terms of trade in the rubber economy lead to a surplus of rural labor, stimulating a massive exodus from the rubber estates

the rubber collapse fosters the foundation of independent communities, but these absorb only part of the over-supply of rural labor

the majority of *barraca* emigrants moves to one of the region's urban centers

the transition from forced to free (wage) labor is accelerated

the regional economy as a whole needs to be reorganized, with progressively lower incomes from rubber being offset by increasing earnings from Brazil nut, palm heart, gold, and timber

Synthesis: Evolutionary trends of extractive economies in northern Bolivia

The incredible wealth of animal and plant life in the northern Bolivian Amazon along with its erstwhile rich cultural heritage are in sharp contrast to the development of the region's human and social capital. The environment for advancing the latter has been, and continues to be, constrained by poor communications and infrastructure, minor skill development, low organizational capacity, a general lack of basic services, scarce capital for investment, and political neglect. Against these odds, it does not come as a surprise that the regional economy still relies to a large extent on what might be considered a primitive stage of economic development, viz. the extraction and export of forest products, coupled with slash-and-burn agriculture that is mainly geared to subsistence. In the context of regional development, a key role accrued to the rubber industry constituting the backbone of northern Bolivia's economy for more than a century. Addressing the questions raised at the beginning of this section, I shall seek to shed light on the interrelations between its principal contractual, market, and

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Brazilian prices were readjusted: in November 1988, SUDHEVEA stipulated the internal rubber price at US$2.56-2.70/kg, benefiting Bolivia as well, since only half a year earlier the intergovernmental agreement on rubber between Brazil and Bolivia had been revised and reinforced in favor of Bolivia (Weiss *et al.* 1988: 46, 63). Though not all Bolivian rubber fetched this high price, this example shows that prices on the Brazilian market were highly competitive even after the price support scheme had been officially withdrawn.

social relations on the one hand, and the basic characteristics of wild rubber and its extractive technology, the associated risks and transaction costs, the relative scarcities of key productive factors, the nature of competition at various levels of the industry, and the specific assignment of property rights on the other.

2.10.1 The wild rubber industry: basic characteristics, plantation failure, scarcity of capital and labor, and spin-off effects

From an Amazonian perspective, the 20th century is so intrinsically related to the economic history of rubber that it can conveniently be called the 'rubber century'. For more than sixty years the Amazon Valley had been the largest, if not the sole, supplier of the basic material for the international rubber goods industry (Weinstein 1983: 9). Endowed with some 300 million rubber trees on an area of more than five million km² (Collier 1981: 16), the Amazon theoretically supported a production of 800,000 tons of rubber annually though actual production of all South America never surpassed 50,000 tons (Davis 1996: 331).[314] In Bolivia, the annual production potential was estimated at fifteen to thirty thousand tons of rubber (DHV 1993a: 7)[315], out of which eight to nine thousand tons, including contraband, were realized at best. The huge gap between potential and actual rubber production was due largely to the dispersed nature of the resource, the difficulty of access, and the scarcity of key productive factors such as capital and labor. These factors combined to high costs of recruitment and monitoring of labor, along with soaring financial, transportation and transaction costs, as most producers were undercapitalized and both supply and suppliers were highly dispersed.

The highly scattered pattern of the resource base constituted one of the foremost impediments to the wild rubber industry. The low density of rubber trees, typically not exceeding two trees per hectare[316], required an equally dispersed tapper force. As between 300 and 500 rubber trees were allocated to a typical tapper in northern Bolivia, each of them occupied an area of anything between 50 and 500 hectares. Large-scale rubber cultivation would have been an alternative, but efforts to promote rubber plantations[317] met invariably with failure. Three

[314] Most of the figures on the number of rubber tappers involved seem grossly inflated. According to one of the more realistic estimates, "up to 150,000 tappers worked wild rubber in the Brazilian Amazon and 10,000s of tappers were active in Peru, Bolivia, Colombia, and Ecuador" (Barham *et al.* (1998:434). However, assuming an average production of 350-400 kg per tapper in the Brazilian Amazon (cf. Santos 1980: 66-79), the number of tappers here hardly exceeded 100,000 at a time. Similarly, given the far higher productivity in the upper Amazon where an average tapper produced up to 1000 kg annually (see for example Santos 1980: 79, Weiss *et al.* 1988: 12), the other countries combined hardly accommodated more than 15,000 to 20,000 tappers at a time.

[315] Weiss *et al.* (1989: 3.4-3.5) provide two different estimations. According to the first, based on the extrapolation of own and official data, they conclude that out of a theoretical production of 21,832 metric tons of rubber a year, only 32% are actually exploited. Alternatively, they suggest that 7000 metric tons (64%) out of a total of 10.894 metric tons potentially exploitable were actually utilized.

[316] The northern Bolivian Amazon comprises zones of varying densities of rubber trees, ranging from less than one tree per hectare to more than ten; production potential is higher north of an imaginary line between Riberalta, Puerto Rico and Porvenir, where areas comprising two to eight trees per hectare prevail (see ZONISIG 1997: 61).

[317] The most famous rubber program was Henry Ford's in Fordlândia and Belterra on the Tapajós River in Brazil: commencing in 1927, one million ha of forest stretching 75 miles along the east bank of the river were designated to be cleared and planted with rubber (Galey 1979, Davis 1996: 338ff). Though by the early 1940s the various diseases attacking the planted rubber had been eradicated (Melby 1942: 467), the plantations met less than ten percent of the rubber demand in Ford's company (Price 1954: 201). Finally, the planting venture

tentative explanations exist why plantation development in the Amazon was stifled (Coomes and Barham 1994: 239): First, scholars adhering to dependency theory suggest that foreign imperial powers (as well as national governments)[318] drained away the local surplus through unequal exchange (e.g., Bonilla 1977, Santos 1980). According to a second view, South American Leaf Blight (SALB)[319] devastated most of the plantations within a few years' time, frustrating both laborers and investors (e.g., Dean 1987). Third, Marxian view holds that plantation development was effectively blocked by durable tapper-trader alliances (e.g., Weinstein 1986: 61).

In the case of northern Bolivia the first view holds little evidence. Though the *Casa Suárez* was registered in London with part of its capital deposited here, the firm as such was entirely Bolivian and its domestic transactions were of impressive extent. It is true that foreign ventures accounted for some drain of the rubber benefits from Bolivia, but the fact remains that in addition to the large domestic and international rubber houses many groups could accumulate capital from rubber production, viz. the state, various medium and small patrons[320], traders, and even tappers. This confirms the findings of Coomes and Barham who, in sharp contrast to previous analyses, hold that local participants retained substantial surplus from their participation in the rubber industry; their argument for surplus generation and retention builds on four observations (Coomes and Barham 1994: 241-2):

Amazonian wild rubber held a prime position in world markets before the expansion of Asian plantations; the prime grade of rubber in Amazonia's industry, Pará upriver, received a price premium up to 50 percent higher than alternative supplies from Africa or Central America

Extractive operations were highly decentralized and operated under widely dispersed ownership; no obvious, sustainable barriers prevented entry to the industry at any stage

Economic returns tend to reward the scarcest factors of production; in the rubber industry, these were capital and labor

Industry participants, especially traders and tappers, were potentially mobile, and recruitment and monitoring of tappers involved high transaction costs

Testing these observations for northern Bolivia, we find ample support for their arguments. First, Pará upriver and hence the most valuable rubber from the Amazon constituted the bulk of Bolivia's rubber output.[321] Second, notwithstanding the supremacy of the *Casa Suárez* which accounted for about two-thirds of Bolivia's rubber output, the remainder was produced by a highly diverse set of large, medium and small patrons, if not independent tappers. According to the National Office of Immigration, Statistics, and Geographical Information, 116 patrons and firms had applied for rubber concessions or been registered as

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went down to defeat owing to labor problems, with the plantation managers claiming that they had been unable to compete with the attractions of the extractive economy (Weinstein 1983: 32, 1986: 71).

[318] In Brazil, for example, "there was seldom a year when taxes on rubber did not constitute at least three fourths of all state revenues in the Amazon area" (Melby 1942: 462).

[319] The disease is caused by a leaf rust fungus (*Microcyclus ulei*), spreading easily from tree to tree in plantations but not so readily among wild trees distributed throughout a species-diverse forest (Prance and Prance 1993: 57).

[320] It is a common misconception that the large rubber houses displaced medium and small patrons during the great rubber boom. Their extensive existence is reported for both Brazil (Weinstein 1983: 282) and Bolivia (ONIEPG 1902).

[321] "Bolivian rubber, entering foreign markets as 'Up-river fine', or as 'Pará' or 'Mollendo' according more with its exit point than with its source, was of the very highest quality" (Fifer 1972: 114).

concessionaires by 1902 (see ONIEPG 1902: 22-9).[322] At the threshold of the 20th century, there were still opportunities to claim unoccupied rubber territories, as the following account from northern Bolivia depicts:

> "These riches [a new rubber trail] belong to him [the *rumbeador*] or to the entrepreneur on whose account he 'prospects'. He has nothing to do but opening a path to the rubber trail with his machete, find out about its value, carve one's initials into the biggest trunks, and to mark the tokens of occupation and exclusion in order to claim instantly the legal settlement by the authority.[323] ... If there are savages in the region, one seeks to make a friend of them; if not, one opposes them, "hunts for them" and expels them from their territory in the name of work and civilization" (Umlauft 1898: 482; my trans.).

These findings confirm accounts from the Brazilian rubber economy where "the petty producer ... managed to maintain some control over the means of production even as the level of exports rose" (Weinstein 1986: 56). That *barracas* frequently changed hands and ever new areas came under exploitation – both by established trade houses and newcomers to the business – further shows that no effective barrier existed that prevented entry to the rubber industry of northern Bolivia. Third, at the height of the boom labor was even more scarce than capital, suggesting that the scarcest factor of production must have been treated with care so that the tappers could retain at least part of the surplus generated (cf. Leutenegger 1940: 99, Sanabria 1988: 98, Coímbra 1993: 116). Fourth, labor mobility did exist throughout the boom and its aftermath and it was by no means uncommon that the tappers left the *barracas* during the off-season when rubber tapping was suspended (see CIDOB 1979a: 216, Barham and Coomes 1994a: 52).[324] Moreover, monitoring of laborers became more feasible and less prohibitive only in times of modern means of transportation.[325]

Even though most of the capital was not accumulated abroad, money drained away from the rubber-producing region, in particular to the Department of Santa Cruz. Functioning as a financial center for the rubber industry, Santa Cruz became the place where the rubber boom manifested in discernible development. As Pounds Sterling poured in from Europe its leather industry and the whole crafts sector began to flourish, favoring the improvement of roads and public construction as a whole (Ardaya 1995: 50-9).[326] Evidently, core-periphery forces were at play, though not in the classical – and in part ideological – North-South dependency sense. Nevertheless, blunt statements such as the following prevail in literature: "It is paradoxical that, while rubber production promoted the rapid settlement of vast areas of the interior, it hindered any possibility for further development" (Bakx 1988: 145). Such a generalized view

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[322] This figure excludes the rubber concessions in the La Paz Department; the figure comprises concessions in the Departments of Santa Cruz (26), Beni (13) and Cochabamba (2), while the bulk lay in the then *Delegación Nacional de Madre de Dios* (75) (ibid.). The popular belief that most of the rubber forests were controlled by a small number of 'rubber barons' was recently also demystified for Brazil, as "the registers of land claims and purchases reveal very few estates that would be considered large by Amazonian standards. Conversely, there are a large number of entries in the registers for claims that include only a few trails of rubber trees, most likely worked by the family of the claimant" (Weinstein 1986: 60).

[323] The legal provision read as follows: "'Any national or foreigner is entitled to explore the national forests of the [Bolivian] Republic for rubber trees and other plants which are important for trade or industry. The explorer of *Siphonia* trees [i.e., *Hevea brasiliensis* trees] is granted an ownership privilege on these, provided he submits his application for a concession at the relevant authority within 180 days from the discovery'" (ibid.).

[324] Unlike *Hevea* rubber, caucho was tapped all year round so that *Hevea* tappers might turn to caucho in the off-season (Barham and Coomes 1994a: 58).

[325] By the 1990s, the Riberalta-based plant of Waldemar Bezerra, for example, employed a special force equipped with high-speed outboard motors to monitor its *barracas*, ensuring that its rubber tappers or Brazil nut gatherers do not deliver their produce to third parties.

[326] Part of the rubber earnings were reinvested in cattle raising, which – in addition to meat production – provided the raw material for the emerging leather industry; those returning from the rubber fields who had not spent their money in diversions invested in the improvement of their houses (ibid.: 60-3).

ignores the manifold, often perhaps not overtly discernible, aspects of intra-regional and extra-regional development brought about by the rubber boom. However modest the measurable impact in northern Bolivia may be, it is certainly not warranted to conclude that the rubber riches were drained from the region without leaving something in return. Evidently, Riberalta, Guayaramerín, and Cobija would be confined to the role of small jungle outposts without the benefits accruing from the rubber trade.[327] Moreover, the region's road network – regardless of its persistent limitations – owes its existence in great part to the rubber industry, in particular to the initiatives of the *Casa Suárez* (Fifer 1972: 158). Finally, Beni's cattle industry would hardly be as it is today without the investments borne by the domestic rubber houses.

There is no evidence from the pre-war period that either the foreign ventures or the *Casa Suárez* made an effort to establish rubber plantations. Principally they had no reason to do so as long as their rubber empires thrived.[328] The first isolated attempts to promote a plantation industry date back to the 1950s when the House of Seiler established 200 ha of *Hevea* plantations at Conquista and 100 ha at Fortaleza (Fifer 1966: 368, Weiss *et al.* 1989: 3.5). Since 1953, another 100 ha have been planted on Riberalta's experimental station (Weiss *et al.* 1989: 3.5) and, to a far lesser extent, on the *barraca* Exaltación on the Beni River. On the whole, such efforts were both small in scale and largely unsuccessful, leaving no more than 200-300 ha of rubber plantations by the early 1990s (López 1993: 75). Leaf blight constituted but one of the ecological factors of limited success given that fire played havoc with the rubber plantations.[329]

The ecological debacle aside, it was the limited interest of patrons and entrepreneurs to invest in new technologies – bearing the risk of depriving them of their dominant position with the tappers – that chiefly accounted for plantation failure. As much as the would-be investors were daunted by fungus attack, as low was their interest to deal with insistent plantation laborers in lieu of humble tappers living isolated in the forest. This is also the reason why any attempts to create syndicates or labor unions on the larger *barracas* were effectively discouraged. Next to the patrons, the traders exhibited little interest in rationalizing rubber production, as plantation development would reduce the need for long-distance river trading (Coomes and Barham 1994: 240). Indeed, the intrinsic waterways of northern Bolivia and the dispersed production of rubber had allowed a divergent set of traders to emerge who could all but benefit from centralized production in rubber plantations. Finally, the tappers themselves were fairly disinclined to large-scale cultivation. The life amidst the forest, as required by the low natural density of rubber trees, guaranteed a degree of autonomy they could not have realized on a plantation: this created a "bond of mutual self-interest ... as tappers controlled production but not exchange, and traders controlled exchange but not production" (Coomes and Barham 1994: 240).[330] Obviously, tapper-trader – or tapper-patron – alliances worked against plantation development.

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[327] Concomitant to the rubber boom, Riberalta's population grew from 252 in 1894 to around 2000 in 1906 (see Von Vacano and Mattis 1906: 97), equivalent to an annual growth rate of 19 percent.

[328] Coomes and Barham (1994: 252) argue that it was precisely the foreign ventures which failed in the attempted shift to plantation production: "To the prospective foreign investor the choice was clear: invest in a plantation in Asia, where wild rubber did not exist, labor was plentiful, and food was relatively cheap; or invest through existing channels of finance in wild rubber extraction in Amazonia" (ibid.: 254).

[329] The plantations at Conquista, established in 1952 by planting rubber and Brazil nut combined, was reduced by recurring fires to about a fourth of its original size; tapping rubber persisted here by 1997.

[330] It needs to be borne in mind that "the produce does *not* belong to the owner of the estate. It belongs to the collector—the rubber cutter" (Russan 1902: 5-6, cited in Weinstein 1986: 68).

The hypothesis that institutional and economic barriers[331] rather than ecological constraints impeded large-scale cultivation of NTFPs in the Amazon is further supported by an aspect disregarded in the discussion to date, viz. the successful cultivation of *Cinchona* spp. in Asia. In fact, *Cinchona* plantations proved a precedent to the rubber case in that a much sought-after forest product provided a stimulus to its domestication beyond the area of its natural distribution. Similar to rubber, no genuine efforts were made to establish *Cinchona* plantations in the Bolivian Amazon or the adjacent Yungas despite the fact that cultivation in Amazonia was neither impaired by leaf blight nor by other major diseases.[332] But a genuine interest in Amazonian *Cinchona* plantations never arose, as these would have tied up scarce capital for many years to come, while extraction from the wild offered immediate returns – an argument that counts for the rubber industry too. The *Cinchona* example shows that leaf blight, though doubtlessly thwarting the development of rubber plantations in northern Bolivia, was not a chief determinant for its failure.[333]

Another feature common to the *quina* and the rubber industries was the low requirement for elaborate infrastructure of machines and services and hence high capital investment. While this proved an advantage in the early rubber era, it turned out a severe drawback for regional development in its later stage. In the absence of complementary enterprises and economic infrastructure no economic base could evolve that was broader than the supply of a single export commodity. Unlike extractive economies *sensu lato* (see Section 0), though, Amazonia's NTFP industries did not produce export enclaves that tend to concentrate capital and labor in a relatively small area with only indirect ties to other domestic economic sectors (Weinstein 1983: 13, Barham *et al.* 1998: 430, 442). This is due mainly to the scattered natural distribution of NTFPs which are typically accessible only via the intrinsic waterways of Amazonia. Ironically, despite the import of manufactured articles from Europe – tools, iron laminae, furniture, cigars and wine, music instruments, books, etc. (Ardaya 1995: 55) – not even a single commodity could have been exported from northern Bolivia, had there not been the provision of cattle from the Beni savannas and agricultural produce from Santa Cruz. Thus, the boom in the rubber industry not only became manifest in the rubber region itself but developed centripetal forces embracing the Bolivian Amazon as a whole. When seeking to determine the overall impact the rubber booms had on regional development, we need to account for such spin-off effects.[334] In addition to Riberalta, Guayaramerín, and Cobija, towns south of the rubber fields such as Trinidad and Santa Cruz would not be as they are today

[331] Economic barriers include the long maturation time of planted rubber and the high opportunity cost of capital (Coomes and Barham 1994: 253) given the long gestation period from an investor's point of view. Opportunity cost of capital differs from the opportunity cost of labor in that the latter is "the cost of using labor for non-rubber industry activities, measured as revenues forgone by not working in the rubber sector" (Coomes and Barham 1994: 244).

[332] *Cinchona ledgeriana*, the species with the highest quinine yield, was easily attacked by disease, in particular in the seedling stage, but the Dutch overcame this problem by grafting onto stronger stock (Prance and Prance 1993: 73).

[333] In this context it is interesting to note that the local scientific community widely acknowledged the ecological constraints of *Hevea* cultivation only after the rubber decline in the early 20th century (Weinstein 1983: 32).

[334] In fact, spin-off effects – also called diffusion or spread effects (Cornelius 1975: 10) – of economic growth in booming industries tend to be overlooked when they occur outside the very boom region. In southern Bolivia, for example, the decline of the regional economy in the early 20th century is attributed to three factors (Langer 1989: 22): 1) the inability of the silver boom to stimulate economic growth outside the mining sector; 2) the impact of foreign investments on the mining industry; and 3) the advent of the rail network. The first two factors show marked parallels with the rubber industry and the underlying reasons of the post-World War I economic decline in northern Bolivia. In both cases, however, little effort has been made to determine where the surplus generated during the booms had been reinvested.

without the effects of the great rubber boom. In fact, Santa Cruz benefited most from the scarcity of capital that characterized the early rubber era. It was here where both foreign and domestic entrepreneurs established their trading firms, thus making Santa Cruz the financial center of the rubber industry. As capital poured in from northern Bolivia and abroad, Santa Cruz consolidated its lead among Bolivia's lowland towns. But it was a matter of give and take between the northern and the southern Bolivian Amazon rather than a net drain-off from the rubber region.

The interdependence between the two regions manifested not only in the capital shifted to and from the rubber fields but in a varied flow of labor.[335] In fact, labor proved another scarce factor of production, often more difficult to secure than capital. Especially at the height of the great rubber boom, capital was readily available both internally and abroad, whereas labor never ceased to be scarce. Bearing this in mind, we can approach the underlying rationale of debt-creditor relationships which were to dominate the labor relations for about a century. In fact, unforced recruitment of labor for the rubber industry was hampered by two factors. First, throughout northern Bolivia there was a notorious lack of indigenous labor.[336] The region's native population was not only limited in numbers but pursued livelihood strategies that were hardly reconcilable with the rather rigid labor regime established on the *barracas*. Second, living conditions in the midst of the forest were so repulsive that it was also difficult to secure the number of laborers needed from outside the region.

"With slavery on the wane and colonial systems of forced Indian labor extinct[337], investors in the new export-oriented enterprises were forced to seek other means of recruiting laborers in a region where capital was scarce and where much of the indigenous population retained some access to the means of subsistence" (Weinstein 1986: 55). Under these circumstances, it was but logical that the *habilito* evolved as a distinctive system that helped recruit laborers and bond them to the patrons of the emerging estates. Interestingly, a debt peonage system evolved in the late 19th century on southern Bolivian and northern Argentinean sugarcane estates for exact the same reasons as in the rubber regions of northern Bolivia or Brazil: "In response to the endemic labor shortage, the region's [i.e. the Department of Chuquisaca's and the adjacent Argentinean North's] landowners began to resort to legal mechanisms to keep the Chiriguano workers on their estates. By the turn of the century, debt peonage had become a legal system formalized by a contract signed by both employer and employee at the local police station ... The contract specified the amount of the advance given to the peon (*conchabado*)[338], the number of years he head to work, and the daily wages to be received. These contracts could be transferred to a different landowner, so that in effect the peon was sold" (Langer 1989: 148). This example underscores the fact that the *habilito* system was not a peculiarity of the rubber industry but owed its emergence and persistence to the inherent logic of natural resource management in regions highly endowed with given forest or

[335] Barham and Coomes (1996: 110) point to the importance of such a 'resource allocation effect' in booming sectors as well as associated 'spending effects' related to the immense trade inflow from overseas.

[336] At the threshold of the 20th century, northern Bolivia's native population had been estimated at 20,000 (Pando 1897: 95). Supposed that half of them were male, out of whom another half was of an economically active age, the male labor force available within the region was 5000 at best. This number compares to more than 10,000 employees on the Suárez *barracas* alone (Melby 1942: 460, Collier 1981: 83). Labor shortage was not confined to northern Bolivia as scarcity of hands was also a frequent complaint in southern Bolivia (Langer 1989: 144).

[337] Weinstein addresses the Directorate System here (see footnote 186), but her argument can well be extended to Bolivia's system of *temporalidades* as practiced in the Moxos region.

[338] In Argentina, *conchabado* literally translates as 'domestic personnel'; on the southern estates, however, these persons were tantamount to the *habilitados* of northern Bolivia.

agricultural products but poor in labor, infrastructure, and capital. The supra-regional importance of the *habilito* or similar systems merits closer investigation.

2.10.2 The habilito *revisited: credit, debt, and insurance in view of transaction costs, competition, risks, and property rights in the wild rubber industry*

Few features of the wild rubber industry have been as strongly criticized by scholars of the great rubber boom as the debt-merchandise contract and the pricing structure of the *habilito* or *aviamento* system; this criticism can be summarized as follows:

> "In general, rubber workers are seen to have been drawn into debt relations by their poverty, ignorance, and preference for personal autonomy, and held firmly in the bonds of debt by patrons and traders who monopolized exchange and captured excess profits from their labor. The primary evidence cited of exploitation, surplus drainage, and trade monopolization is the persistence and pervasiveness of the debt-merchandise contract and the pyramid structure of pricing for provisions and rubber down the chain from export houses to traders, patrons, and tappers. The tapper, at the bottom of the price pyramid, bore the worst terms of trade, paying in some cases 250-500 percent over city prices for basic supplies and receiving less than 50 percent of the prevailing city price for his rubber ... Such pricing, observers argue, kept tappers' earnings barely above subsistence and allowed for surplus drainage to rubber industry elites and eventually out of the Amazon entirely, via profit remittances and import expenditures" (Barham and Coomes 1996: 66).

This prevailing view of the debt contract and trade relations, relying heavily upon the assertion of widespread trade monopoly, is challenged by Barham and Coomes (1996: 66) on two grounds: first, trading was competitive rather than monopolistic, as few barriers existed that kept prospective traders from entering rubber trade on 'open' rivers, i.e. rivers that were not under the monopoly of a patron or firm; second, the pervasiveness of debt-merchandise contracts on 'open' rivers – many of which constituted the most productive rubber rivers – revealed a price structure similar to that of 'closed' rivers and, consequently, trade monopoly alone does not sufficiently explain the persistence of debt relations. One more point needs to be made that challenges the standard image cited above: the system that was to become known as *habilito* or *aviamento* during the great rubber boom did not invariably imply a debt-peonage system. In effect, it often turned out as such, but principally we should distinguish between the function of credit and that of debt: while credit was an integral component of any such arrangement, debt was not patently the prime pursuit of a *habilito* or *aviamento* supplier.

The *habilito* or *aviamento* system was not genuinely new to the Amazon, nor to its extractive economy. In Bolivia, it merged the straightforward system of advances on credit as prevalent in the *quina* economy[339] and the state-enforced system of *corvée* labor known as *temporalidades*. "In effect, what the rubber boom did was to organize and link together much of what already existed, adding new institutional layers to the way extraction of forest products was financed" (Schmink and Wood 1992: 43). The underlying rationale of the resulting *habilito* or *aviamento* was to tie labor to a given patron or trader rather than to exert coercion as such. Even if the system made tappers accumulate debts, "there is little indication that these debts typically served as a form of enserfment; rather, they seem to have been the customary means for building up a clientele" (Weinstein 1986: 60). Bauer (1979: 62) argues on a similar line: "Most of the new research is consistent in its rejection of debt as a controlling feature of labor." Thus, the emerging dependency relations should not only be

[339] As early as the mid-19th century, extractors of Peruvian bark – mostly of indigenous origin – were paid advances for tools and foodstuffs in return for the later delivery of a specified volume of raw material (Domínguez and Gómez 1990: 25).

looked at as being imbued with "exploitative patterns of production and distribution" (Gill 1985: 227). Rather, the observed class structures, labor and tenancy relations, and the institutions related to forest use can also be viewed as an outcome of rational economic behavior in the context of missing or imperfect markets (Barham and Coomes 1994a: 39, Key and Runsten 1999: 383). From this perspective, the emergence of the *habilito* system reflects a response to imperfections in the markets for credit, insurance, information, and factors of production.

The crucial role credit played in the *habilito* shall first be highlighted. Rubber extraction or other extractive activities could not be started without advances provided on credit.[340] In the currency-starved Amazonian economy most of such transactions occurred in kind rather than in cash. The virtual exclusion of monetary transactions is said to have reinforced the tappers' dependency upon the patrons or traders (Becerra 1984: 60f, Serier 1993: 76, Assies 1997: 13). This view is simplistic for several reasons. First, it denies the fact that cash is of very limited value in the remoteness of a vast basin where the next shop to make use of money is likely to be situated some boat days downstream. Under these conditions, and given the "traditional Amazonian distrust for money" (Schmink and Wood 1992: 44), barter is the logic consequence. In fact, the *habilito* entailed a form of 'delayed barter' (Romanoff 1992: 126)[341], which can be viewed as an adaptation to the needs of all parties involved, since "barter is more functional if it includes the possibility of delay, or credit" (Humphrey and Hugh-Jones 1992: 8).[342] Second, the patrons were as dependent on the tappers as *vice versa*, requiring the institutional arrangements governing their relation to be based on a certain degree of reciprocity.[343] Indeed, the *habilito* system "shaped the social fabric of the region and gave its cohesion through the relationships of *reciprocal obligation*" (Lescure *et al.* 1994: 68; emphasis added). Third, the patrons' control of a given stretch of forest was less absolute as commonly assumed. Interloping traders constantly threatened to undermine the patrons' monopoly by calling on the tappers in their very centers or arriving on a *barraca* in the absence of the patron (cf. Sanabria 1988: 101). Moreover, the patrons faced difficulties to pressure the tappers into producing more rubber and they did not even succeed in preventing them from leaving the *barracas* during the rainy season (Ballivián and Pinilla 1912: 110-2).

The *habilito* or *aviamento* system was doubtlessly more than a mere means to establish and maintain coercive patron-client relationships. This is illustrated by an account from the Brazilian Amazon:

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[340] How pertinent the advance system was perceived by the tappers is reflected in the attempt of a foreign company, the Rubber estates of Pará, to conduct its rubber operations entirely on a cash basis: the tappers on the land it had purchased simply refused to gather rubber without the customary advance of goods and tools. In addition, the company's endeavor to dispense with the middlemen was seriously flawed as the company never received the exact merchandise it had ordered – if the goods arrived at all (Weinstein 1986: 67).

[341] Delayed barter is strongly rooted in traditions also encountered elsewhere in the Amazonian where "barter is initiated by one party asking for objects owned by the other; the asker may offer goods in return or wait for a request. There is no expectation that either requests or exchanges need be simultaneous, the transaction rests on trust, and there is often considerable delay before the two sides of the transaction are completed" (Hugh-Jones 1992: 60-1).

[342] Across cultures, there is ample anthropological evidence that the insistence on immediate return did not accord with the general pattern of barter: "In the great majority of cases a more diffused, delayed pattern of transactions took place, involving services as well as a broader array of things, including food" (Thomas 1992: 24).

[343] Sahlins (1972: 193-6) distinguishes three types of reciprocities, viz. generalized, balanced, and negative reciprocity; these are encountered along a continuum from less economic to more economic, and from putatively altruistic to net utilitarian advantage. In the case of the rubber industry, negative reciprocity was clearly prevailing but in certain instances reciprocity was more or less balanced.

> "We must treat the violent tirades against aviadores and regatão traders with some caution. ... There was even a hint of xenophobia and anti-semitism in the outbursts against the traders, for many of them were Levantines or Sephardic Jews. The traders *did* fulfill a service to the isolated rubber tappers. By bringing their overpriced goods up thousands of kilometers of Amazonian waterways, they gave seringueiros the supplies and companionship needed, and an outlet for the rubber. This meant that in the early decades of the rubber boom many rubber gatherers were independent. They could escape to remote forests to work rubber trails during the dry season" (Hemming 1987: 293).

In addition to the fact that not all rubber tappers were forced into dependency[344], two points stand out in this statement: the service function performed by the patrons or traders and the aspect of company. It is often failed to acknowledge that however asymmetrical patron-client relationships may be they always include a component of reciprocity that often extends beyond mere economic exchange. This is especially the case when they are cemented through a ceremonial exchange of *compadrazgo*, involving obligations for both parties (Stanfield 1994: 45). Such mutually obliging relationships also existed, and continue to exist, on the *barracas* in the Bolivian Amazon. In such cases, the *patrones* not only decided who ought to marry with whom but made themselves *compadres* of the new couples' offspring, thus assuming responsibility for their future wellbeing (ibid.). The patrons, however, were certainly no uniform group. While some became reputed for the abuse of laborers, others were more concerned with the tappers' wellbeing; in the latter case, the abandonment of *barracas* in the wake of the rubber decline was felt as patron abandonment (Assies 1997: 17).

Compradazgo was not only sought with the patrons but also with itinerant traders. On the one hand, such ritual kinship could prove essential in case a patron had to abandon his *barraca* or part of his tappers. In addition, the monotonous and lonesome life in the isolated rubber centers, deprived of social life and even the most basic facilities, made any appearance of a person other than the *barraca* overseer most welcome, in particular when the former carried two goods that were essentially lacking: news and delicacies. This "made it hard for the tappers to resist selling their rubber to interloping traders, since the latter frequently offered the tappers goods that otherwise would be difficult to come by. Indeed, the *aviadores* may have inflated prices and supplied *seringueiros* with inferior merchandise, but their willingness to take special orders for food, clothing, or medicine made a significant difference to the tapper working in a remote rubber district" (Weinstein 1986: 68). The existence of interloping traders, who came to be known as 'river pirates' (ibid.), demonstrates that the patrons' control of the laborers was not all-embracing. Evidently, the tappers ran the risk of reprisals, including corporal punishment, when selling to trespassing traders. But the latter had a keen interest to reduce such risk for their own and for the tappers' sake. In fact, the traders made creative efforts to render such hidden deals a mutually beneficial endeavor. How widespread 'fraud and cheating' actually were is depicted in a landmark account of the rubber boom:

> "The foregoing description of production and exchange may also be misleading in the sense that it depicts a smoothly operating patron-client system and makes no explicit mention of the enormous potential for trickery, swindling, and coercion inherent in a boom economy where a small group of powerful merchants attempted to extract the maximum output from a limited pool of producers. There were conflicts and tension at every level of the *aviamento* network, ranging in intensity from petty cheating to outright violence, with the tapper being the main victim of such deception and abuse. Again, the seringueiro's relative isolation and well-founded fear of reprisals made collective resistance both

[344] The existence of independent rubber tappers before, during, and after the rubber boom is an often overlooked phenomenon. Foresta (1991: 290) indirectly confirms the independence of certain tappers when saying that "[in] the late nineteenth century, the steadily expanding demand for rubber encouraged caboclos to neglect subsistence activities and concentrate on collecting rubber, which they sold to itinerant traders, much as they had always sold forest products. When the rubber boom collapsed, the caboclos, trapped within the decaying regional economy, returned to their semi-subsistence lifeway."

> difficult and rare. One common, and profitable, response to a merchant who tried to increase his demands or raise his prices was to include rocks, sand, or manioc meal in the pelle of rubber to inflate its weight. In this manner the seringueiro could increase his output significantly without additional labor, and the deception was rarely discovered before the pelle reached Belém or Manaus. Once on the docks, it would be split open for inspection, but by then it would be nearly impossible to trace the adulteration back to the individual tapper. A particular serious form of tapper 'resistance' involved the selling of rubber to an itinerant trader rather than to the tapper's regular patrão—a violation of the patron-client relationship that the aviadores considered all too prevalent" (Weinstein 1983: 21).

Rubber tappers violated the debt-merchandise arrangements as much as the patrons did, as even recent evidence from northern Bolivia depicts. In the early 1980s, i.e. at a time when rubber trade experienced its last boom, it was reported by a neutral observer:

> "The rubber tapper is no saint either. To a large extent, he works under the system of advances in cash, food, and merchandise. He makes a debt account that he pays off with production and labor, but occasionally some of them decide to help themselves relocate, taking along everything including the tools they have been lent, in order to settle down in another place without remembering to pay what they owe" (Justiniano 1982: 5; my trans.).

As much as general conditions varied from one *barraca* to another, as divergent were the respective *habilito* or *aviamento* arrangements (see Stanfield 1998: 47). This is stressed by Barbara Weinstein, "one of the best historians of the boom" (Hecht and Cockburn 1989: 62):

> "It should be emphasized, however, that the system was fraught with variations at every level, and no one arrangement can be cited as 'typical'. Indeed, modes of exchange varied not only from estate to estate but even from trail to trail, since individual *aviados* (clients) could form very different agreements with their patrão. For instance, many tappers were actually small-scale seringalistas who legally owned four or five trails, along with enough land to feed themselves and their families on a diet of manioc, fish, and game. The propertied tapper would still have informal patron-client ties with a small-town merchant or a wealthier neighbor, but the relationship would be more flexible and less susceptible to coercion than that between the propertyless tapper and the seringalista" (Weinstein 1983: 20).

We have seen before that tapper-trader ties existed not only in the case of independent tappers. In general, however, dependent tappers were largely subject to the conditions established by their patrons and in these instances the *habilito* and the entailed form of delayed barter may have been far from being mutually satisfactory. This was, for example, the case when the *habilito* provider took unilateral advantage of the taker's urgent need for an advance; for an important feature of barter is that "the protagonists are essentially free and equal, either can pull out of the deal and at the end of it they are quits" (Humphrey and Hugh-Jones 1992: 1). As long as rubber production was viable in the Bolivian Amazon, this was hardly the case. It was precisely the suppression of a free move out of the contract with the patrons that kept the tappers in dependency. In extreme cases, such as the Putumayo, a debt-peonage system evolved that turned into outright slavery (Hugh-Jones 1992: 65). Under these circumstances debts became a deliberate means to intimidate laborers and to coercively tie them to a given estate. The exclusion of money then aimed overtly at restricting the tappers' possibilities to abscond and join another patron.

"But in a region as vast as the Amazon, escape to another zone of rubber extractions, particularly during the early years of the rubber era, seems to have been relatively easy, thereby limiting the effectiveness of debt as a means of control" (Weinstein 1986: 61). Once a tapper had managed to flee – on foot or aboard a passing launch unless the captain insisted on the instant payment of the fare – he found ready employment on other *barracas* (Leutenegger 1940: *passim*, Weinstein 1986: 63), even if this would be considered a "conquest of personnel" by the patron or firm deprived of his laborer (Pacheco 1992: 253). Tappers also

changed hands in official agreements between estate owners, with the new patron taking over the accumulated debts of a tapper (Barham *et al.* 1998: 436). Whatever the arrangement, most patrons sought to leave the tappers in the dark about their accounts. Thus, the dependents "may be kept in a constant state of indebtedness, not knowing if the goods they receive are in payment for last year's work, an advance on the next, or both at once" (Hugh-Jones 1992: 49).[345]

As the years passed, debt assumed a key role in the rubber industry throughout the Amazon, culminating in "the fetishization of the debt of debt-peonage" (Taussig 1987: 128). In fact, such fetishism built up on old-established forms of exchange among the native population: "A gigantic piece of make belief, the debt was where the gift economy of the Indian meshed with the capitalist economy of the colonist" (ibid.). Whatever the patrons or traders advanced on credit cemented the tappers' dependence, though not necessarily their indebtedness. Nonetheless, the temptations in the stores of the *barracas* or in the well-equipped floating shops of river traders were virtually irresistible, thus laying the foundation of a 'debt-merchandise contract' (Barham and Coomes 1996: 65) which characterized various tapper-patron and tapper-trader relations. Many tappers "came to the conclusion that savings made no sense, for even if one put aside money, one ended up in debts, unless one opted for the life of a hermit full of terrible privation" (Leutenegger 1940: 100; my trans.). This was exactly the point many patrons and traders wanted the tappers to get to. In this sense, the *habilito* fulfilled a twin purpose: first, to furnish the tapper with all the goods and tools needed to assume work; second, to tie him to a given patron or trader. Through the tappers' long-term obligations the patrons sought to secure a steady stream of rubber, to avoid significant expense and risk entailed in recruiting replacement tappers, and to ensure that the rubber trees were tapped sustainably (Barham and Coomes 1996: 68). To this end, the debts accumulated through 'generous' provisions by the patrons proved instrumental.

It needs to be emphasized that the *habilito* system implies indebtedness along the whole chain of advances from the processing plants to the extractors (cf. Weinstein 1983: 24). "The patron is himself in debt to other patrons or merchants, and is as quick as a tapper to complain about merchandise advances and exploitation" (Romanoff 1992: 123). In fact, debts become a major problem only when they actually undermine the livelihood basis. As long as foodstuffs and other essential trade goods are still being provided by the patrons or traders, extractors do not have to be overly concerned with their accumulated debt. This explains for a good part the somewhat relaxed attitude of *barraca* residents toward a negative balance in the patrons' ledgers[346], reflecting what 'revisionist' writers have called the 'semi-voluntary' nature of debt peonage (Bakx 1988: 148; see also Bauer 1979). The large rubber houses too were well aware of the mutually beneficially nature of debts. Debts in the stores of the *Casa Suárez* at Cachuela Esperanza, for example, clearly aimed at binding both foreign and domestic personnel to the company, for they were unlimited as long as the employee was willing and able to work (cf. Leutenegger 1940: 97-9). As we will see in Chapter 3, there were various ways to avoid or evade debts and, curiously, many patrons and firms assumed a similarly

[345] Such a state of uncertainty persists on certain *barracas* up to the present day. On the Beni River, for example, none of the seven resident families on the *barraca* San Luis had a clear idea about its actual *saldo*. Upon inquiry on the amount of Brazil nuts and palm hearts delivered, as well as the days worked for the patron as *jornaleros*, they appeared aware of their contribution but not overly concerned with a fair reimbursement for their effort. This somewhat timid and principally compliant attitude is especially encountered on the larger *barracas* which are permanently inhabited and where a constant supply of provisions from the *barraca's* store is secured.

[346] This attitude has also been observed in the Brazilian Amazon: "'When one asks these Indians how much they owe, they always answer: "Who knows? Only the boss could know"'" (Tocantins, cited in Hemming 1987: 288).

relaxed attitude toward outstanding accounts, permitting that part of the debts were never recovered. In times of high rubber prices, for example, the *Casa Suárez* afforded to dismiss employees even when these were indebted (Leutenegger 1940: 100).

We have seen that the *habilito* fulfilled a variety of functions that were beneficial to both the suppliers and takers. The resulting debt-merchandise contract reduced otherwise prohibitive transaction costs for traders and patrons, and secured a measure of insurance and access to credit for tappers (Coomes and Barham 1994: 241).[347] This *raison d'être* of the *habilito* system was so compelling that it existed both in different extractive economies and across nations. The Bolivian *habilito* finds its equivalent not only in the Brazilian *aviamento* but also in the Ecuadorian *concertaje* (see Griffin 1976: 186). "No other alternate contract arrangement could meet the needs of creditors and borrowers at lower costs in this high risk, high transaction cost environment where both labor and capital were scarce" (Barham and Coomes 1996: 68).[348] In fact, it is often underestimated that a great deal of risk was involved in rubber trade; "the most salient risks were losses of the product, labour time and workers, as well as fluctuations in prices and exchange rates" (Barham and Coomes 1994a: 50). In fact, the risk to lose rubber – the only collateral to the credits advanced – existed at all layers of the *habilito* pyramid.

Apart from outright fraud, occurring along the entire marketing chain, it were risks such as diseases, fatalities, or other mishaps, especially during the perilous river transport, that seriously challenged the profitability of the endeavor. On the upper Madeira, where most of Bolivia's rubber had to pass, the major falls posed a serious problem to river navigation, but the time and effort to off-load the cargo proved so off-putting that the more daring boatmen sought to shoot the rapids. As a result, between ten and fifteen percent of the rubber was lost annually and the loss of life assumed sickening portions (Fifer 1970: 129-30). Evidently, these losses had to be made up for and the rubber houses sought to recuperate the forfeited income elsewhere; but by what means and at what price? As far back as the mid-19th century it was realized that traders in the upper Amazon would do better if selling their products at fifteen percent on the cost of Pará for cash, instead of charging a twenty-five percent surplus on credit (Herndon 1853: 251). In the wake of the rubber boom such discrepancies even increased, with the result that "ultimately, the easiest way for each participant in the network to protect himself against such losses was to charge everyone abnormally high prices" (Weinstein 1983: 28). Being at the bottom of the pyramid, the tappers were deprived of this possibility but, as seen earlier, they helped themselves by adulterating the rubber delivered.

We have touched upon the retention of surplus in the 'high risk, high transaction cost environment' previously. The question remains what evidence exists, in addition to the narrative accounts cited earlier, to suggest that local participants actually did retain some surplus. Whether a rubber tapper faced with a positive or negative balance depended on the terms of trade stipulated by the patron and, often more importantly, on the number and productivity of the rubber trees allocated to the tapper, as well as his tapping technique,

[347] Whatever the nature of economic and social relationships, it must be stressed that the search for new relationships inflicts high search costs, often because of ascribed kinship, age or gender roles (cf. Wilk 1994: 371).

[348] Alternate contractual arrangements encompass fixed-wage tapping, commission or piece-rate tapping, share tapping, and rental tapping (Coomes and Barham 1994: 245). In Bolivia, virtually all these forms existed next to each other but all were associated, albeit to varying degrees, with the *habilito*. Evidently, these arrangements are not mutually exclusive with a debt-merchandise contract. For a more detailed discussion of these arrangements, see Barham and Coomes (1996: 68-71).

physical condition, and, ultimately, own motivation to work.[349] Unfortunately, no accurate figures are available for the boom period that would enable us to analyze the bearing these factors had on the tappers' earnings. But we can resort to figures from the post-boom period following World War II to determine the likelihood of surplus retention on the part of the tappers.

In northern Bolivia, rubber earnings were distributed between the patrons and the tappers according to a traditional formula: of the price paid in Riberalta – reduced by ten percent to account for losses during the transport, as well as administrative and financial costs – they received one-third and two-thirds, respectively (Anonymus 1988: 3).[350] Based on real prices of 1988 (ibid.), set-up costs for a typical rubber tapper amounted to Bs.700 (US$298); these were shared between the patron (Bs.500 or US$ 213) and the tapper (Bs.200 or US$85).[351] Assuming an annual production of 1000 kg per tapper (cf. Weiss *et al.* 1988: 12, Pacheco 1990b: 12) and a mean Riberalta price for *goma* and *sernamby* of Bs.2/kg (US$0.85) (Anonymus 1988: 7), the annual rubber-based income of tappers and patrons averaged Bs.1200 (US$511) and Bs.600 (US$255), respectively.[352] Deducting their setting-up costs, the first year's earnings of tappers and patrons amounted to Bs.1000 (US$426) and Bs.100 (US$43), respectively. This huge discrepancy illustrates the importance of sunk costs[353] in the wild rubber industry. As labor was the primary source of sunk costs in the industry (Barham *et al.* 1998: 436), establishing long-term relations with the tappers was the patrons' only way to reach the break-even point of their labor investment. Doubtlessly, part of the latter was recovered by charging the tappers 20% up the Riberalta prices for basic supplies, in addition to a supplement in dependence of the transport costs between Riberalta and a given *barraca* (Anonymus 1988: 3). Nevertheless, this example shows that even at a time of the rubber market in decline the retention of surplus on the part of the tappers was far from being negligible. This allows us to conclude that the boom years' accounts of 'astronomic' gains on the part of apt rubber tappers (Coímbra 1993: 116) were not too far from reality and, at least as far as the more efficient tappers were concerned, local surplus retention *did* happen.

Next to the role of credit and debt, the *habilito* or *aviamento* entailed an insurance function, assuring that a trader or patron would look after a tapper as long as he could expect a return for the credit advanced. This is another reason why the prevailing view of the system as being

[349] Despite ample evidence that the attitude towards work differs from one person to another across highly diverse work situations all around the globe, most scholars seem to shun this topic. As early as 1925, Chayanov stressed the special importance of the degree of labor effort and the degree of self exploitation in peasant economies (1966: 5-6). More recently, Coomes and Barham were among the few to point up the tapper's own motivation as one among other important factors determining their economic returns (1994: 242).

[350] Prices were stipulated monthly in tripartite agreements between the Local Labor Inspectorate, the Association of Rubber and Brazil Nut Producers (ASPROGOAL), and the Federation of Rubber Tappers. In the Brazilian Amazon, similar arrangements existed during the boom period, with tappers receiving one-half to two-thirds of the value of their rubber at local market prices (Weinstein 1983: 179).

[351] The following costs were involved: advance to the tapper (Bs.50 or US$21), transfer to the *barraca* and alimentation on the trip (Bs.50 or US$21), opening up of three rubber trails (Bs.300 or US$128), one thousand rubber receptacles (Bs.150 or US$64), and first *habilito* on the *barraca* (Bs.150 or US$64) (ibid.).

[352] In this example, the ten-percent deduction of the Riberalta price is allowed for.

[353] "'Sunk costs' are defined as the difference at any given point in time between the original investment cost (minus depreciation) and its salvage value, that is the resale or transfer price" (Barham *et al.* 1998: 430). Coupled with hysteresis, sunk costs help to explain the severity of the bust that followed the great rubber boom, as these hampered the smooth flow of investments into the production of other tradeables in the wake of the bust, or into other opportunities outside the region (ibid.: 435). Hysteresis was evident in the continued presence of sufficient numbers of tappers and traders on the rubber estates to maintain prior production levels, even after loan contracts all along the trade chain had broken down (ibid.: 436-7).

singularly exploitative of the tappers needs to be reviewed. In fact, "the advance of credit and goods represented not only an obligation to be met by the tapper (i.e., a debt) but also a commitment on the part of the patron to the tapper to enable him to carry over his obligation (i.e., insurance)" (Barham and Coomes 1996: 68). In this sense, the *Casa Suárez* took a clear lead against all other rubber houses in that free medical assistance was granted to both the tappers and their wives.[354] To reduce the *habilito* or *aviamento* to a means of outright exploitation also ignores that under the "system, security came not from the amount of earnings but from the continuing relationship, based on debt and obligation, that ensured survival and indirect contact with the monetized world economy" (Schmink and Wood 1992: 44). What remains without the insurance as provided by the *habilito* can be seen on the tributaries of the major rivers in the northern Bolivian Amazon today: after the collapse of the rubber market, itinerant traders ply up these rivers mainly in time of the Brazil nut harvest. During the rest of the year, the few people remaining on the *barracas* are deprived of virtually all supplies they cannot produce themselves. In case of severe sickness there is neither transport nor credit for seeking treatment in town. This is the dire reality after the *habilito* left alongside the patrons and traders in the wake of the rubber collapse. Consequently, the major part of the *barraca* population saw no alternative but to follow the *habilito* providers to town or to establish themselves in an independent community (see sections 4.3 and 4.4).

Following the rubber collapse, the *habilito* underwent a drastic change that, for the time being, has not duly been acknowledged. It is claimed that despite the constricting market many patrons continued to maintain or even raise their profits by increasing the prices of the goods supplied to the collectors, who in turn needed to strengthen their social links with the patrons so as to secure the indispensable goods (Lescure *et al.* 1994: 71). This view, however, ignores that the traditional *habilito* underpinned the tappers' *long-term* obligations to the patrons only as long as rubber production was viable. It was precisely because of the widening price differential between the delivered rubber and the provisions furnished that many tappers began to leave the *barracas* in the mid-1980s (Apuray, pers. comm.). In the general turmoil, little attention was paid to outstanding debts that had lost most of their value anyway given the concomitant hyperinflation.

At about the same time the Brazil nut boom set in, paralleled since the early 1990s by a boom in the palm heart industry. As a result, the traditional labor relations changed because the burgeoning trade required mobile and flexible extractors. Since the *barracas* were largely deprived of a permanent labor force, the *habilito* converted into a means to secure the *short-term* supply of labor from ex-*barraca* residents who have settled in town. Their services are only required during the three-month Brazil nut harvest or, in case of palm heart extraction, for collecting expeditions that rarely exceed two or three weeks (see Chapter 3). In other words, the erstwhile twin purpose of the *habilito* – i.e., provision of the start-up capital for an extractor *and* creation of a long-term bond between him and a given patron or trader – was reduced to its first function. As the *habilito* nowadays aims at simply enabling its taker to extract Brazil nut, palm heart, or timber, credit clearly outweighs the debt function, whereby insurance is in force only as long as the advanced credit has not been worked off.

Recent shifts in forest product extraction notwithstanding (see Chapter 3), the credit function of the *habilito* remains the *sine qua non* of contemporary extractive economies. By its very nature, extraction activities take place in remote areas devoid of basic facilities, requiring advances provided on credit to prospective extractors. The credit's logic is so inescapable that

[354] For the contract details, see Fifer (1970: 140) and Pacheco (1992: 237-45).

the system has been in place well before the rubber booms. In fact, advances on credit were made even prior to the era of *barraca* establishment, i.e. they were independent of land ownership and hence efforts to tie a permanent labor force to the land. They constituted the indispensable means for motivating extractors to spend several weeks or months in the forest in search of *quina*, *caucho* or *Hevea* rubber, as much as they do in the contemporary Brazil nut, palm heart, or timber industries.

Given the changed circumstances, the 'new' *habilito* no longer serves as the basis for permanent indebtedness. On the contrary, unilateral utility increasingly accrues to the *habilito* takers. Though it still happens in isolated cases that – for reasons often within the responsibility of the *zafreros* – Brazil nut gatherers return from the forest without having worked off their debts, it is not taken for granted that they will do so the year to come. To a great extent, the terms of trade underlying the *habilito* have changed in favor of the *habilito* takers. The increasing competition for raw material in both the Brazil nut and palm heart industries provides them with the opportunity to access credit without returning the labor or raw material agreed upon. The risk of the delinquents to sacrifice future credit is limited given that the roughly 500 contractors forwarding most of the credits from the processing plants cannot keep track of the 'black sheep' among the several thousand extractors. Future contract opportunities are therefore hardly at risk when would-be *zafreros* decide to escape after having received the advance payment. Evidence from the field suggests that between ten and twenty percent of those who entered a *habilito* for a collecting season and have received their advance never show up or leave the forest soon after their arrival.[355] This is another important aspect of the high risks and high transactions faced by plant owners, patrons, and traders in the extractive economy.

After having addressed the varied functions of credit, debt, and insurance inherent in the *habilito* or *aviamento* system, as well as the role of scarce production factors such as capital and labor, we shall shortly turn to another crucial aspect with respect to the emergence of a 'variegated economic landscape', as Barham and Coomes put it, viz. resource endowment. As this aspect will be dealt with in more detail in Chapter 4, suffice it here to point to one of its salient features, namely the rather unrestricted access to the resources on the part of the patrons. The tappers' dependence on them reflected in the micro-social relations was a direct outcome of macro-structural patterns which granted the large landholders easy access to, and control over, the natural resources. For the most part, resource use in northern Bolivia happened in a legal void – not because laws were lacking but as a result of their weak enforcement. In fact, only a handful of patrons or independent tapper disposed of legal property rights.[356] Already in times of the great rubber boom, the Bolivian government had

[355] To offset such losses, the patrons or contractors have to build in the *habilito* a certain risk premium. Barham and Coomes (1994a: 65) give an interesting example in this respect: "If the patron anticipated, for example, that two of ten tappers would die, desert, or become incapacitated by illness, then each of the ten would need to be charged 37.5% to secure a return of 10% on investment." To illustrate this example: assuming that a patron invests US$100 each to advance ten tappers, he would have to recuperate US$1100 to secure a return of 10% on his investment – which would be very modest given that Bolivia's inflation rate hovered around 10% over the past decade. If two of the ten tappers – for whatever motive – fail to pay back the advance, the missing US$300 (the balance between the targeted US$1100 and the US$800 invested in the remaining eight tappers) can only be recuperated when the latter are charged 37.5% on the US$800 they received as advance. "This premium could easily raise the interest rate tappers face to 45% so as to provide, on average, a 15% rate of return for this risky investment. What appears to be an exorbitant price margin in this example becomes the basis for ensuring normal rates of return in a highly risky environment" (ibid.).

[356] Property rights in the rubber industry extended essentially to three areas, viz. the extracted rubber, land and rubber tress, and waterways (Barham and Coomes 1994a: 54). As to rubber, property rights were granted to the

proven incapable to impose state control in the rubber forests. This situation was reinforced through the inadequacy of the 1953 Agrarian Reform to the socio-political situation of northern Bolivia. Ironically, it was not land reforms or other state interventions that strengthened the independent *campesino* sector. Instead, the three rubber crises progressively undermined the patrons' tight grip on the forest resources: each crisis gave an impetus to the foundation of independent communities which expanded at the expense of the *barraca* sector.

It is astonishing to what extent scholars, in particular those adhering to Political Ecology and Political Economy, tend to oversimplify the rationale underlying systems such as the *habilito*, *aviamento*, or *concertaje* (see for example Coates 1987: 94-6, Bakx 1988: 147-8, Fearnside 1989: 388, Hecht and Cockburn 1989: 62). Meillier (1998) discredits the *aviamento* as a "paternalistic, authoritarian, economic system where forest products are exchanged for manufactured goods in a disproportionate manner leading to the indebtedness of the indigenous collector." Barbosa (2000: 114) argues on the same line: "Rubber tappers have been a disenfranchised category in Brazilian history. Throughout Amazônia they have worked in semi-slavery in the system of *aviamento*." Similarly, Larrea and North (1997: 931) denounce *concertaje* as a mere "form of debt peonage (including prison for debt) which was formally abolished in 1918." However, only if we acknowledge the varied and often contradicting factors that have led to the emergence of such systems – entailing advantages and disadvantages for all parties involved – we can do justice to the people who, after all, keep these systems alive. Obviously, the *habilito* or *aviamento* owe their continued, albeit modified, existence in the Amazon to their functional significance. Though the system may maintain extractor populations in conditions of deprivation, its capacity to call forth forest products from remote areas and, in turn, to supply these with goods other than that of the subsistence economy is a value of its own. It is through such systems that the subsistence economy meets the market economy (Richards 1993: 22), in areas which otherwise offer little or nothing of what Amazonia's increasingly urban population strives for.

2.10.3 Macro-level influences on booms and busts in extractive economies

Having analyzed the various facets of the *habilito* as a micro-level institution governing the relations between patrons, traders, and tappers, we shall briefly turn to macro-level variables that likewise have a bearing on the extractive economy. Torres and Martine (1991: 9), for example, argue that "variables such as the rates of economic growth, exchange rates and petroleum prices have, over time, also been crucial for the native rubber producers." The effect of the oil crises has been addressed before. What shall be of interest here is the aspect of growth and decline in several (extractive) economies, as well as the impact of exchange rate distortions. In addition, I shall highlight the impact of inflation on NTFP industries, in particular the rubber industry.

Though rubber used to play a pivotal role in the extractive economy of northern Bolivia, it needs to be emphasized that income has always been generated by a host of NTFPs, no matter whether these were commercialized locally, regionally, or internationally. As early as 1900, for example, cashew and Brazil nuts, hides and skins, sugarcane, and the like were traded on the Acre and Purus Rivers – by then under Bolivian sovereignty (Souza 1983: 174, 182, 223).

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tappers, while they were not restricted with respect to the waterways as these were open to free passage. The rubber lands, in turn, principally belonged to the state, allocating *estradas* against nominal fees.

Trade in Brazil nut on the upper Madeira had even commenced by the mid-19th century (Gibbon 1854: 311). Yet more important were the contributions from the national *quina* industry, showing marked parallels with the oscillations of the rubber trade. Temporal ups and downs in the extractive economies translated into a spatial back and forth of the extractor populations. Advance and regression of the extractive frontier – or the 'spasmodic occupation' of the Amazon forests (Messias Franco 1995: 24) – was a direct response to economic cycles in international markets. It needs to be emphasized that growth and decline phases of given forest products rarely coincided. Rather, such boom and bust cycles materialized in asynchronous waves, enabling the regional population to constantly rely on extractive activities for cash income (see Chapters 3 and 5).

Shifts of labor and capital occurred not only within the forest sector but across the economy as a whole. For example, "tin, along with the pre-Acre War rubber boom of the 1890s, not only helped to tide the nation over a serious depression caused by the decline in silver prices, but also ushered in a totally new era of previously undreamed of prosperity" (Klein 1969: 33). Traditionally, the mining sector had been the mainstay of Bolivia's economy. The silver industry was one of its main pillars and, consequently, its decline called for the search of an alternate source of revenue. Not surprisingly, the Bolivian government thus welcomed the boom in the rubber industry, not least because it spurred the national integration of a territory hitherto disarticulated. The region thus came into the reach of the government, allowing it to capture part of the surplus generated by the rubber industry, but remained distant enough to eschew effective state interference in the social aspects of production.

Next to these political and macroeconomic considerations, it is important to recognize the impact inflation had on an industry that relied heavily on the infusion of capital. Without doubt, the risk of inflation was one of the principal reasons why stakeholders in the extractive economy preferred kind over cash. Even so, Bolivia's rubber industry was repeatedly affected by rampant inflation. The most serious precedent to the hyperinflation in the mid-1980s dates back to the first half of the 1950s[357], i.e. precisely to the period when the second rubber crisis was most pronounced. Inflation rates had also been high, though not severe by later standards, throughout the 1930s, reaching 51 percent at the end of that decade (Klein 1969: 253). This inflationary crisis was parallel to the severest phase of agony during Bolivia's first rubber crisis and, curiously, inflation began to level off during the period 1940-3 (Klein 1969: 347), i.e. at a time when rubber and tin exports recovered.[358] These examples show that periods of high inflation aggravated the rubber crises during the 1930s, the 1950s, and the mid-1980s. In times of rampant inflation, it made little sense to invest in the *habilito* as part of an economy that relied on 'delayed barter', as this would have implied sunk costs from which the *habilito* supplier had little to gain.

[357] "The inflation which had been serious before 1952, became astronomical after the revolution. Bolivia's rate of inflation between the revolution and 1956 was the highest experienced by any country at that time, and effectively wiped out much of the élite based on urban property, as well as a large portion of the traditional middle class" (Klein 1969: 404).

[358] There was, however, no direct link between the recovery of the rubber industry and the drop in the inflation rate. The latter rather owed to a general improvement of Bolivia's balance of trade, which certainly benefited from rising rubber and tin exports: "Because of the tremendous demand for tin, especially after 1941, and the inability to import manufactured goods because of World War II, Bolivia exported more than she imported" (Klein 1969: 347).

The exchange rate is another macroeconomic variable that has a bearing on Bolivia's extractive economy, in particular the rate between the national and the Brazilian currency.[359] It goes almost without saying that the exchange rate in turn is affected by inflation. By the early 1990s, for example, the differences between the *cruzeiro 'oficial'* and the *cruzeiro 'paralelo'* generally favored the contraband of Brazil nut between Bolivia, Peru and Brazil (Holt 1991, cited in Wickens 1995: 32). In recent years, developments in Bolivia's rubber and Brazil nut industries were strongly shaped by the effects of the Brazilian *Plan Real*. Designed as an exchange-rate based stabilization program, the plan was implemented in July 1994. As a result, Brazil's inflation rate dropped from almost 50% in June 1994 to less than 5% by the end of 1994 and ever since (Cinquetti 2000: 151-2). In effect, the plan also reverted the terms of trade between Bolivia and Brazil: unlike previous years, Brazilian imports have been encouraged while Bolivian exports to Brazil have been suffering from the current disparity of purchasing power between the two countries. This was another reason why the export of Bolivian rubber came to a virtual standstill by 1995; since about the same time the import of raw material from Acre has become more lucrative for Bolivia's Brazil nut industry (see Chapter 3). The ultimate rubber decline and the recent boom in the Brazil nut industry should therefore also be viewed in the light of macroeconomic changes.

*2.10.4 Extractivism-agriculture, tapper-trader, proletariat-peasant and Indian-*campesino *trajectories*

Shifts occurring at the macro level, as addressed in the preceding section, had an equivalent at the level of individuals. Households or individuals had to choose where best to invest family or individual labor, notwithstanding the obligations arising from the *habilito*. It is widely held, that the *habilito* or *aviamento* system worked against the accumulation of capital and the creation of an internal market which could stimulate in Amazonia the kind of development that took place, for example, in southern Brazil (e.g., Weinstein 1983: 265, Schmink and Wood 1992: 45). In fact, the development of an internal market was hampered by low internal supply rather than low internal demand. The trouble was that labor was viewed too precious a resource to be dedicated to activities other than rubber tapping. As a result, local agriculture was neglected but, contrary to popular belief, not chiefly in order to reinforce the tappers' dependence on the patrons. Rather, the tappers themselves were lured into rubber:

> "The concentration on rubber forced dependence on imported foodstuffs which were eventually sold for three to six times their nominal price. This was the unfortunate result of the irresistible lure of a cash crop of high value. The *seringueiro* thus found it more profitable to abandon his small garden plot and rely solely on imported articles" (Melby 1942: 466).

Such agriculture-extractivism labor shifts[360] and *vice versa* are typical for extraction-based livelihoods and will be dealt with in more detail in the Chapters 3 and 5. Suffice it here to add that the opportunity costs of self-provisioning with staples in times of high rubber prices were simply too high to justify the time away from tapping (cf. Coomes and Barham 1994: 246).

These shifts were even more varied when accounting for moves between different extractive activities, as observed in the rubber and *quina* industries. Typically, the shifts occurred at the

[359] The *boliviano* replaced the *peso* as Bolivian currency in August 1985. In Brazil, the national currency shifted from cruzados novos to cruzeiros in March 1990 (Anderson and Ioris 1992a: 349), and from cruzeiro to real in July 1994 (Cinquetti 2000: 155).

[360] Similar shifts were observed in the Brazilian state of Pará, where toward the end of the 19th century "there was a wholesale desertion of labour from agriculture to extractive activities" (Bakx 1988: 144).

same level of the social pyramid, i.e. a *quina* gatherer might start to tap rubber while a merchant might trade rubber instead of *quina*. But there were also possibilities to pass on to the next layer within a given extractive economy. As even patron-dependent tappers in northern Bolivia could accumulate a certain fortune, they were enabled to assume the position of a *freguez* in the term's original meaning (see Ballivián 1896a: 32). Such a tapper-turned-contractor had acquired intimate knowledge of the modes of production at the very beginning of the marketing channel. He made use of it by hiring some tappers, helping him accumulate further capital provided the personnel and the site were carefully selected. Other tappers would invest their rubber earnings in merchandise and a launch so as to make a living as itinerant traders. That the social pyramid was permeable up to the top layer is illustrated by a number of estate owners who had embarked as petty traders or even tappers (see Weinstein 1983: 24, Coomes and Barham 1994: 244). Unfortunately, "a paucity of precise, primary data on the actual returns of these participants does limit our ability to generalize about the distribution of captured surplus" (Coomes and Barham 1994: 244-5). It seems likely, however, that this kind of career development was the exception rather than the rule.[361] On the other hand, conditions for capital accumulations among independent tappers were much better than those of patron-dependent tappers (Barham and Coomes 1994a: 70).

Another kind of 'career development' became manifest in the labor relations emerging during the great rubber boom. Unlike the Brazilian rubber economy, a rather rapid process of proletarianization occurred on the *barracas* in northern Bolivia. In Brazil, the rubber tappers, "though exploited in a variety of ways and often vulnerable to violence and coercion, were able to resist proletarianization. That is, the average *seringueiro* managed to retain some control over his work rhythms, as well as some discretion over the disposal of his product. Thus the American rubber boom[362] ... did not generate a transition to a mode of production in which the producers were completely separated from productive resources or compensated by wages" (Weinstein 1986: 56). In contrast, the rubber tappers on the Suárez *barracas* and those of some other firms in northern Bolivia received monthly wages, a clear characteristic of early proletarianization through fixed-wage tapping. To a great extent, the tappers were also separated from the productive resources, i.e. the land from which they extracted the rubber: first, because the land was not theirs – and, in legal terms, often not even that of their patrons; second, because the transfer of personnel from one *barraca* to another – within the same company or between firms – was common (see Leutenegger 1940, Pacheco 1992: 237). In contrast to Weinstein (1983, 1986) who sees Brazil's rubber boom characterized by 'precapitalist relations', the boom in northern Bolivia reflects an era in which 'primitive capitalist relations' prevailed (see the following Section).

It was only through the decline of rubber trade and the subsequent disintegration of large rubber holdings that a countermovement and, to a certain extent, a 'peasantrization' set in.[363] Monthly wages disappeared as the general mode of payment on the *barracas*, laborers – in particular the tappers – were put on piece-rate wages (Pacheco 1991: 12), and the relaxation

[361] Recent examples from the region's extractive economies encompass Luchin Lazo, an El Sena-based wholesaler, who utilized his earnings from the gold rush in the early 1990s (see Section 3.6) to purchase *barracas* and cattle ranches, and to invest in the processing of palm hearts in addition to his Brazil nut operations. Another example is Freddy Mejía, the owner of the Brazil nut factory 'Amabol', who traded in merchandise on a modest scale, before entering the Brazil nut business.

[362] Weinstein (1983, 1986) seeks to cover the whole Amazon rubber boom but largely draws on evidence from the boom as it became manifest in the lower Amazon, in particular in the Amazon estuary. Strictly speaking, she chiefly addresses the Brazilian rubber boom.

[363] For the shift from proletarian to peasant in Acre, see Bakx (1988).

of restrictions on agriculture allowed them to base their livelihoods on subsistence agriculture combined with forest product extraction. In contrast to Marxian theory, there has been no linear process from independent modes of production, via feudal control of labor, to capitalist labor regimes based on a thorough proletarianization. Instead, we detect cyclic patterns of labor relations, exhibiting rather capitalist and proletarian features in times of an expanding (rubber) market, but more pronounced peasant characteristics during periods of contraction.

Another factor is of importance in this context: while in Brazil a *caboclo* population – composed of detribalized Indians and persons of mixed ancestry who engage in subsistence farming and gathering – emerged as a consequence of the Portuguese crown's inability to control the entire Amazon basin (Weinstein 1986: 57), it was only in the wake of the rubber decline that an independent *campesino* sector emerged in northern Bolivia. It was here where those of the Indians who had survived the genocide during the great rubber boom merged with non-indigenous tappers who had been recruited from outside the region. Doubtlessly, the advancing rubber frontier constrained local development options most for the region's native population, which was effectively diminished by more than a half. While at the eve of the boom the number of indigenous groups had been estimated at thirty to forty, with a population of roughly 20,000 (Pando 1897: 95), no more than eight peoples inhabit northern Bolivia today. They comprise a population of about 8500, equivalent to fifteen percent of today's rural population.[364] The largest groups among them, the *Tacana* and *Cavineño*, can hardly be distinguished from *campesinos* of mixed or non-indigenous descent. Only the smaller groups have maintained more distinct cultural and linguistic features that warrant to talk of an independent Indian culture. It is important to note that it was not coerced labor as such that was responsible for the rapid acculturation of indigenous groups. Rather, they became increasingly dependent on the commodities – made available through the rubber industry –that they themselves could not produce. Consequently, they spent most time on rubber tapping instead of maintaining traditional agriculture or hunting cycles (see Weinstein 1986: 64-5). As a result of the acculturation process, the independent *campesino* sector reveals a blend between extractive and agricultural traditions native to northern Bolivia with techniques, skills, demands, and attitudes that were imported from outside the region.

2.10.5 Three stages of extractive economies: from mercantilist via primitive capitalist to full-scale capitalist relations

The microeconomic relations between the patrons or traders and the tappers find their equivalent in the relation between the core and the periphery, or the metropolitan centers and their satellites in the terms of world-system scholars (see e.g., Frank 1969a, b; Wallerstein 1974, 1980, 1989; Timberlake 1985; Frank and Gills 1993; Barbosa 2000).[365] Departing from

[364] The peoples encompass *Tacana* (population of 5135), *Cavineño* (1752), *Chácobo* (772), *Esse Ejja* (475), *Yaminahua* (161), *Machineri* (155), *Araona* (94), and *Pacahuara* (8) (República de Bolivia 1995: 16, Diez Astete and Riester 1996: 65, VAIPO 1998).

[365] World-system theory strongly roots in dependency theory. One of its major premises is the distinction between *un*development and *under*development. The first refers to a 'primitive tribe' living in peace with its environment in a state of sociocultural self-containment. Underdevelopment, on the other hand, implies unilaterally beneficial exchange relations between centers or metropoles and dependent peripheries or satellites (Kutsche 1994: 6-7). Undevelopment thus represents an all-accepted state in more or less egalitarian societies, whereas underdevelopment is believed to be deliberately produced by powerful elites in the North and reproduced by their counterparts in the South. As much as Andre Gunder Frank and in particular Immanuel Wallerstein advanced world-system theory to a complex and noteworthy concept, as one-dimensional are similar approaches by others. One such example from the Amazon reads as follows: "The problem of environmental

dependency theory, these would view the patrons as the willing henchmen (*Erfüllungsgehilfen*) of international capital, based in the world metropolitan centers, which is seen to be chiefly interested in extracting the surplus from resource-rich regions. Even if one does not wish to follow entirely such an argumentation, three distinct stages can be identified for the evolution of extractive economies in northern Bolivia:

Mercantilist relations (1820s until 1860s) during the first *quina* boom:

- itinerant extractivism irrespective of state ownership of forest resources
- increasing state interference in the trade of a key export commodity
- state control reinforced through the monopoly of the National *Quina* Bank
- rather informal labor arrangements
- relatively low importance of foreign capital
- embryonic incorporation into the world economy

Primitive capitalism (1860s until mid-1980s) during the rubber era:

- firms and patrons appropriate forest land through the establishment of rubber estates
- state interference is highest in the early boom years but diminishes sharply thereafter
- modes of production become increasingly capitalist as the *barracas* consolidate
- the *habilito* evolves as the principal means to recruit and bond labor, which is originally reimbursed with monthly wages but later on with piece-work rates
- labor relations vary from semi-servitude to full-scale proletarian arrangements
- foreign capital is crucial; rubber houses other than the *Casa Suárez* depend initially on British and North-American, and subsequently on Brazilian capital
- strongly increased incorporation into the world economy

Full-scale capitalism (since the mid-1980s) in the wake of the rubber collapse and the upcoming booms in the Brazil nut and palm heart industries:

- the independent *campesino* sector consolidates at the expense of the *barraca* sector
- state interference manifests in the gradual conversion of *barracas* into forest concessions
- debt bondage ceases as the *habilito* turns from a means to establish enduring labor relations into one securing short-term labor
- proletarianization is most pronounced in the processing plants where labor is reimbursed with monthly or piece-rate wages

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destruction in Amazônia is that of incorporation into a capitalist world-economy via the Brazilian economy. Amazônia's problems occur wherever this capitalist expansion occurs, ..." (Barbosa 2000: 165). Basically, Barbosa's regional-level claims can be traced back to the global-level assertions put forward by Frank, the 'mastermind' of dependency theory, whose central – and from a contemporary perspective rather naive – argument goes as follows: "Underdevelopment in Latin America (and elsewhere) developed as the result of the colonial structure of world capitalist development. This structure has penetrated all of Latin America, thereby forming and transforming colonial and class structure of underdevelopment throughout the continent on the national and local levels. As a result, the development of underdevelopment will continue in Latin America until its people free themselves from this structure the only way possible, by violent revolutionary victory over their own bourgeoisie and over imperialism" (1969b: x). It goes without saying that history proved Frank wrong, in particular as he and his 'comrades' did not foresee the largely non-violent liberation of virtually all Latin America from military dictatorship in the 1970s and 1980s. In recent works, though, Frank admits this misperception and argues instead that "global evolution has never been uniform ...; that is, general and especially uniform global development was and remains impossible" (1996: 45). He now sees "global evolutionary forces" at play and, along with Gorbachev, believes that a development policy of delinking a national or regional economy from the world market is unrealistic (ibid.).

procurement of raw material from the estates or forest concessions relies largely on a mobile and temporary work force recruited from the free (urban) labor market

the independent *campesino* sector provides an increasing amount of raw material to the emerging industries under a free market system

general independence of foreign capital but reliance on national banks and brokers

far-reaching incorporation into the world economy

The pre-rubber era in northern Bolivia was characterized by **mercantilist relations**. State intervention, an essential feature of a mercantilist system, was executed at various levels: early regulation of the trade as decreed by the government of Ballivián was followed by creating the National *Quina* Bank in order to further regulate production, to obtain exclusive trading privileges, and to stimulate foreign trade. In addition, the *quina* exports generated revenues for the state whose interference culminated in Belzu's attempt to subordinate the bark trade to the interests of his nationalist-populist administration. On the other hand, capitalist relations were yet to emerge, as the central means of production – land – was neither appropriated by the bark collectors nor by the traders who financed their venture. With the state effectively controlling the trade, the scope for labor division was fairly restricted. Though it remains open whether the government rather than the private sector appropriated most of the surplus, a distinct hierarchy as characteristic for the subsequent rubber industry was largely absent from *quina* trade.

To classify the rubber era – also characterized by the emergence of extractive economies other than the rubber industry – according to the scheme suggested above prompts some questions. One may argue, for example, that the boom era resembled a feudal mode of production rather than primitive capitalism (cf. Weinstein 1983: 278)[366]. To reply to this argument, I shall draw on Laclau's theoretical framework distinguishing feudal and capitalist modes of production:

> "The *feudal mode of production* is one in which the productive process operates according to the following pattern: 1. the economic surplus is produced by a labor force subject to extra-economic compulsion; 2. the economic surplus is privately appropriated by someone other than the direct producer; 3. property in the means of production remains in the hands of the direct producer. In the *capitalist mode of production*, the economic surplus is also subject to private appropriation, but as distinct from feudalism, ownership of the means of production is severed from ownership of labour-power; it is that permits the transformation of labour-power into a commodity, and with this the birth of the wage-relation" (Laclau 1971: 33-4, emphasis added).

Departing from this framework, the debt peonage system as prevailing in the early 20th century in northern Bolivia can be seen as a mode of extra-economic compulsion in that it implied coercion beyond the mere balance of debit and credit. The system largely deprived the direct producer, that is the rubber tapper, from the economic surplus accruing from his rubber production. But the land on which he produced was not his property; in Laclau's terms, the ownership of land as means of production is severed from the ownership of labor – the only means of production owned by the rubber tapper.[367] Though still bearing traits of

[366] Weinstein (1983: 278) holds that Laclau's broad definition of the 'feudal' mode of production "more or less corresponds to conditions in the Amazon"; nonetheless she prefers the term 'precapitalist' to 'feudal', "since the latter usually evokes images of medieval Europe that have no relevance to the Amazonian situation" (ibid.). However, I show below that her view of the Amazonian rubber industry as being 'feudal' or 'precapitalist' is mistaken, at least as regards the case of northern Bolivia. For a different critique of Weinstein's argumentation, see Barham and Coomes (1996: 108-9).

[367] Similarly, Bakx (1988: 148) argues that the social relations of production on the rubber estates in Acre were specifically capitalist because labor was separated from the means of production. This view is backed by

feudalism, Bolivia's rubber industry must be classified as an early capitalist economy (cf. Pacheco 1992: 222). Its **primitive capitalist stage** differed from a feudal mode of production in that the rubber barons appropriated the land through their investment in the infrastructure of the *barracas*, the dispatching of laborers, and the allocation of rubber trails. In addition, labor relations emerged that reimbursed the tappers with monthly or piece-rate wages.[368]

A **full-scale capitalist production system** has evolved only in the wake of the rubber collapse in the late 20th century. The erstwhile rubber barons or patrons are losing what *de jure* never was theirs, viz. the land on which they controlled forest product extraction. Interestingly, this is not happening because of a (bourgeois) revolution as predicted by world-system theory (cf. Frank 1969b: *passim*), but as a consequence of both the latest rubber crisis and increased state intervention manifested in the new forestry and land reform legislation. In this context, the division of labor becomes ever more distinct, as the *barracas* are being converted into forest concessions[369] for which temporary labor is recruited under a wage regime. The Brazil nut gatherers had long been rejected to be incorporated into the General Labor Law, for the patrons saw them as *campesinos* or laborers working on their own account (Pacheco 1991: 1).[370] But the advance of proletarianization is reflected in the fact that since the early 1990s the *zafreros* have been taken care of by the Ministry of Work and Labor Development (Durán 1994: 8). This becomes manifest in the annual tripartite negotiations on the minimum Brazil nut prices to be paid to the gatherers on the *barracas*, in which the Local Labor Inspectorate is involved on behalf of the Ministry.[371] The *habilito* paid to NTFP extractors persists in the form of an advance (*anticipo*) without which extractive activities would not get started. Urban-based Brazil nut or palm heart gatherers are recruited for a given period of time, usually not exceeding three to four months, and the amount of the advance plus the likely surplus production constitute their final wage. Next to the gatherers, the laborers in the processing plants enjoy a more secure status by being fully incorporated into the General Labor Law, entitling them to receive a social security grant in addition to their piecework or monthly wages and a Christmas bonus (*aguinaldo*).[372] The 'new' extractive economy relies to a great extent on an urban-based proletariat for both the procurement of raw material and its processing in urban-based plants (see Section 5.4.2).

The transition from mercantilist via primitive capitalist to full-scale capitalist production modes in northern Bolivia's extractive economies should be viewed as a broadly generalized trajectory rather than a rigid scheme of linear progression. It is Frank himself who encourages us to abandon our belief in capitalism as a distinct mode of production and separate system, since in his opinion it is not the mode of production that determines overall development

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Barbosa (2000: 134), holding that "the rubber-tappers have been fully integrated into a capitalist world-economy."

[368] For a comprehensive and far more sophisticated debate on "capitalism and the myth of feudalism", drawing on an analysis of Brazilian agriculture, see Frank (1969a: 219-77).

[369] Through the *Decreto Supremo Nº 25532*, promulgated on 5 October 1999, the *barracas* were officially recognized as forest concessions.

[370] This debate had long antecedents, since most *barraca* owners refused to recognize their laborers as agro-extractive wage laborers (*asalariados agroforestales*) in accordance with legal provisions (ibid.). In contrast, the laborers temporarily recruited for the harvest of sugarcane or cotton have been incorporated into the General Labor Law since 1983 (Pacheco 1990b: 26).

[371] The other two parties involved are the Association of National Brazil Nut Processors (ABAN) and the Federation of Brazil Nut Gatherers, mostly represented by the Peasant Federation (*Federación de Campesinos*).

[372] However, those who remove the seed coat of the nuts (*quebradores*) are still exempted from the status of laborers *sensu* the General Labor Law. This is an issue of much debate which every now and then leads to strike-like actions.

patterns (1996: 44). Yet the broad classification suggested above may highlight the important alterations that have taken place over the past nearly two hundred years. Both exogenous and endogenous forces have shaped extractive economies which purportedly are characterized by notoriously unequal exchange (e.g., Bunker 1984, 1985; Painter 1987; Lescure *et al.* 1994: 69; Brown and Rosendo 2000: 219). In the following section we will see that the institutional adjustments with respect to the way forest product extraction is organized have been accompanied by a more equal benefit sharing between the various stakeholders involved.

3

THE POST-RUBBER-ERA: SHIFTS IN FOREST PRODUCT EXTRACTION

The way to the rubber tree in Amazonia has got nothing to do with the road connecting Paris with Amsterdam ...

Márcio Souza
Galvez Imperador do Acre, 1983

This chapter is based on the article "Shifts in forest product extraction: The post-rubber era in the Bolivian Amazon" (Stoian 2000). For this study it has been substantially rewritten.

Analytical framework and research questions

Commercial forest product extraction in the Amazon has commenced long before the great rubber boom of the late 19th and early 20th centuries. One of the earliest examples is the trade in *Drogas do Sertão* from Brazil – wild cacao, urucú (*Bixa orellana*), oil seeds, tannins, and a host of medicinal and toxic substances – which flourished in the 18th century under the Jesuit exploitation of indigenous labor (Costa 1989: 43-8). Our knowledge of these and more recent cycles of commercial NTFP extraction other than rubber exploitation is still superficial: "While the effects of the Rubber Boom have justly received a good deal of attention, little has been written about the numerous, short-lived smaller 'booms' in Amazonian forest products" (Padoch and De Jong 1990: 157). Part of this gap has been filled in the previous chapter for the case of northern Bolivia, covering its history of commercial NTFP extraction from the very beginnings in the early 19th-century *quina* trade to the recent phase of ultimate rubber decline. This chapter will address the adjustments in the regional extractive economy in the post-rubber era, emphasizing the expansion of the Brazil nut, palm heart, and timber industries, coupled with increased agricultural activities.

We have seen in Section 1.1.2 that two divergent notions exist with respect to extractivism, namely an 'evolutionist' and a 'modern' view. Being a prominent representative of the former, Homma (1992: 25, 1994: 39) developed a neoclassical model of the historical cycle of forest product extraction in Amazonia. It distinguishes four phases, viz. expansion, stabilization, decline, and cultivated plantation (Homma 1992: 25). In the evolutionist's view, extractivism is doomed to disappear as the inherent dynamics of forest product extraction imply market decline as the resource base is overexploited and/or a given product begins to be cultivated or substituted. De Jong (1999: 146) summarizes the cornerstones of Homma's model as follows:

> "This historical cycle theory predicts that initially, when the product is being discovered, an expansion phase starts because of increasing demand. During the subsequent stabilisation phase, supply and demand balance at the point of maximum extraction capacity. The decline phase that follows is the result of a declining resource and a related increase in extraction costs. When demand surpasses supply and prices increase, there is a strong incentive to increase supply through cultivation or the production of substitutes.

> [Plantation] [p]roduction usually means lower costs to obtain the products through higher returns on land and labour. Otherwise synthetic substitutes will be developed, where technologically possible. Many examples, such as rubber, or more recently, palm heart, confirm this historical cycle."

Though Homma's model has been criticized for being too simplistic (De Jong 1999: 146), it received widespread attention, in particular among the opponents of 'modern' extractivism. For the purpose of this chapter, it shall be employed as the principal analytical framework.

The debate on the pros and cons of extractivism has ramifications beyond the somewhat hypothetical interpretation of its long-term evolutionary trends. Advocates of extraction-based livelihood systems point to the yet existing employment-generating effect of NTFP industries. Though in case of the Brazil nut harvest this is considerable (see Sections 5.4.1 and 5.4.2), suggested numbers on the actual participation in the Amazon are rather inflated. Clay (1997a: 246), for instance, holds that "an estimated two hundred thousand people take part in the commercial nut harvest." Although over the past years Brazil nut production in Amazonia was around 25% up the average volume of the 1980s, probably less than fifty thousand people have been actively involved in the harvest.[373] Even if accounting for the fact that the latter often maintain other family members, the employment effect of Brazil nut seems rather negligible for the Amazon as a whole. This does not mean that on a regional scale the Brazil nut industry may not play a pivotal role as the principal employer, as is the case in northern Bolivia.

Another hot spot of discussion as regards NTFP-based development is the issue of benefit sharing in extractive economies. In northern Bolivia as elsewhere in Amazonia, these economies have long been denounced for their exploitative structure, the underlying system of unequal exchange, and coercive measures as exerted by unscrupulous patrons (e.g., Bunker 1984, 1985, Browder 1992a, b; Schmink and Wood 1992). Only few scholars sought to demystify such stereotypes by scrutinizing the microeconomics of NTFP industries and the transaction costs incurred. By doing so for the case of the rubber economy, Barham and Coomes (1996: 72) conclude that "the problem of how rents from the wild rubber industry were distributed among the participants—from tappers to patrons and traders—is perhaps the most conceptually important yet empirically problematic of the questions to be answered about the boom. ... on average, substantial surplus was captured locally by patrons, traders, and even tappers in the industry."

If at the height of the boom, i.e. the allegedly most exploitative period of the rubber economy, notable benefits were captured at the bottom end of the marketing chain, what share of benefits accrues to the stakeholders in a phase of market decline? In spite of the obvious lack of empirical data on this more recent epoch, certain observers suggest "progressive impoverishment" of rubber tappers and Brazil nut collectors given the "wearing down of their physical and psychic condition" as brought about by the social system underlying NTFP use (Fernández and Pacheco 1990: 10; my trans.). As much as this drastic assertion appears

[373] Clay's figure of 200,000 people refers to the average Amazonian production of 42,000 metric tons of Brazil nut throughout the 1980s (Gill and Duffus 1988a,b, 1991, cited in Clay 1997a: 247). In the period 1994-98, Bolivia alone accounted for 25,000 metric tons out of the total of 52,000 metric tons produced annually (see Man-Producten 1998: 12). But not more than 20,000 people have been involved in Bolivia's Brazil nut harvest, including 10,000-12,000 gatherers, 7500-9000 accompanying persons, and approximately 1,500 contractors, intermediaries, and transport agents. Since the conditions under which the Brazil nut harvest takes place in Brazil and Peru are not fundamentally different from those in Bolivia, it is evident that Clay's estimation of harvest participation is heavily inflated.

exaggerated for the time of its proclamation, as clearly it is mistaken for the current situation in northern Bolivia. With all the hardship it meant for the regional population, the rubber collapse – and certain developments prior to it – have drastically altered the way NTFP use is organized. Nowadays, a key role in the marketing of NTFPs in northern Bolivia accrues to middlemen who bridge the gap between the local producers and the predominantly urban-based processing plants. These intermediaries provide producers with three essential services: 1) access to credit, 2) quick payment for products in cash or kind, and 3) transportation; not to count communication or the spread of information in areas devoid of access to news media other than radio.[374] In a resource-laden but infrastructure-poor region as the northern Bolivian Amazon, middlemen are indispensable mediators to centralize the supply of forest products among dispersed producers. As seen in the previous chapter, they use credit as a device for establishing rights in labor and produce against other competitors.[375]

Despite the important functions middlemen fulfill, skeptics point to their allegedly disproportional gains, not to mention those of patrons, processors, or wholesalers. Lescure *et al.* (1994: 83), for instance, conjecture that "from the collector to the point of export, the price of traditional products may increase by a factor of 10 to 20." In the case of Brazil nut, forest-based collectors in Brazil are reported to receive only 2.5% of the average spot price in New York (Clay 1997a: 270). According to his calculations, collectors gain 3.5% of F.O.B. Brazil and a mere 0.15% of the final retail price of manufactured nut products in the United States (ibid.).[376] These shares, however, are not unanimously held. Ryan (1991), for example, reports that the share of Brazil nut gatherers in Cajarí (Amapá, Brazil) is up to 3% of the final sales price in New York. Unfortunately it remains open, whether this share refers to the retail price of shelled or in-shell nuts, or even that of manufactured products. Further contradictions arise as regards the respective F.O.B. shares: Brazilian extractors of Brazil nuts are said to receive 12% of F.O.B. Brazil (UNCTAD 1994: 24), if not 43% of F.O.B. Manaus (Lescure *et al.* 1992: 156).[377] The former share is more than three times that of Clay. These examples illustrate that benefit capturing on the part of NTFP extractors can be calculated 'up' and 'down', depending on the methodology applied, the reliability of price information and, ultimately, the researcher's 'politico-scientific' ambitions. There is evidence that, for reasons at times related to political correctness, at times associated with political agitation, the expected 'political' results determine the outcome of a study on benefit capturing in NTFP-based economies.

The prevailing picture of NTFP marketing is that those at the very beginning of the marketing chain, in particular the collector households, pocket only a tiny fraction of the benefits accruing from NTFP sale as they are taken advantage of by intermediaries, wholesalers, and

[374] As early as the rubber boom, it was reported that the arrival of itinerant traders in remote forest settlements not only meant fresh food and tasteful delicacies but also, and principally, news from the external world (Sanabria 1988: 102).

[375] A similar strategy is reported from the Colombian Amazon where intermediaries involved in the cocaine trade make use of credit to secure both labor and produce (Hugh-Jones 1992: 65). The same author suggests that this aspect "deserves more attention in the literature on debt-peonage as a whole" (ibid.).

[376] It is misleading to refer to manufactured products in general. For example, the volume share of Brazil nuts in a chocolate can hardly be exactly determined. The investigation of benefit capturing along the marketing chain of Brazil nut should focus on the retail prices of shelled nuts or in-shell nuts in the USA or Europe rather than comparing the non-comparable.

[377] The original text reads as follows: "Prices also increase during the commercial process. Between the extractor and the export FOB price in Manaus, the value of sorva is multiplied by 14.6, piassaba by 7.8, and *castanha* by 2.3" (Lescure *et al.* 1992: 156; emphasis added). Sorva is latex from *Couma* spp., *Parahancornia spec.* or *Mucoa spec.*; piassaba is fibers from *Leopoldinia piassaba* Wall.

the owners of processing plants. This may be exemplified by a study of vegetable ivory (*Phytelephas aequatorialis*) production in western Ecuador that concludes:

> "... until very recently, payments received by intermediaries and households barely covered the opportunity costs of labour, fuel, and other inputs dedicated to gathering and marketing vegetable ivory. By contrast, processor-exporters have been earning super-normal profits. This pattern is consistent with the distribution of gains from non-timber extraction in other parts of the Western Hemisphere" (Southgate *et al.* 1996: 68).

If opportunity costs indeed were barely covered, one is prompted to ask why people nonetheless engage in such activities. Could it be that such generalizing statements are based on impressionistic 'politically correct' postulations rather than on socio-economic evidence? As a matter of fact, microeconomics are the Achilles' heel of most contemporary literature on extraction-based livelihood systems. This holds also true of a recent article on the extractive economy in the Brazilian Amazon. Titled "Environmentalists, rubber tappers and empowerment: the politics and economics of extractive reserves", the paper's main affiliation seems indeed to be politics rather than economics.

> "A significant share of the profits generated by forest products is captured by intermediaries. Extractivism in Amazonia has historically been characterized by unequal relations of production. For many years rubber tappers were exploited by landowners (*seringalistas*) through the *aviamento* system. When the rubber trade became less profitable landowners gradually abandoned the rubber estates and the marketing of forest products was taken over by middlemen (*marreteiros*). At present, *marreteiros* continue to dominate the extractivist economy in Rondônia with the consequence that producer margins remain low" (Brown and Rosendo 2000: 219).

This is by no means an isolated example of impressionistic scholarship which lacks economic scrutiny, empirical evidence, and even the sources cited from. 'Worlds' are made by repeating the commonly 'known', the purportedly obvious, and the allegedly unambiguous (see Chapter 1.3.2). In contrast, this chapter seeks to contribute to a more realistic and empirically founded view on the actual distribution of benefits among the various stakeholders involved in the Brazil nut and palm heart industries of northern Bolivia. It will be based on the following guiding questions:

(4) What is the added value in NTFP trade and to whom accrue the resulting benefits?

(6) What is the impact of increased industrialization in the Brazil nut industry on both the collectors and the laborers of the processing plants?

Specifically, the following questions shall be addressed:

In what way have progressively lower incomes from rubber tapping been offset?

What are the implications of the recent booms in the Brazil and palm heart industries on the regional economy?

Do extractor populations get unequal shares of NTFP benefits?

The methodological approach employed to answer these questions roots in the compilation and analysis of 'gray' literature in form of numerous documents of the Association of Rubber and Brazil Nut Producers (ASPROGOAL), the *Federación de Campesinos*, the Chamber of Exporters from Northern Bolivia (CADEXNOR), the Association of National Brazil Nut Processors (ABAN), as well as official export and price statistics. These were complemented and cross-checked with the data resulting from the village and household surveys [for the methodology and methods applied, see Sections 4.2, 5.2 and Stoian (in prep.)], as well as information derived from informal talks with a variety of key informants.

Macroeconomic, political and legal framework

Bolivia suffered from a general economic and monetary crisis in the early 1980s. The government of Victor Paz Estenssoro sought to combat it by promulgating the 1985 New Economic Policy (NEP). Its neoliberal approach implied, *inter alia*, the liberalization of trade and export promotion (Pacheco 1998: 231-3). The NEP "sought to control labor, liberalize foreign investments, decentralize and reprivatize public entities, and impose classic IMF [International Monetary Fund] austerity measures (freezing wages, laying off workers, cutting subsidies, lifting price controls, devaluing the currency to stimulate exports, reducing the government deficit, and reforming taxes to create more revenue)" (Morales 1992: 159). Though heavily criticized for its negative repercussions on the poorer sections of society, the NEP and Structural Adjustment Programs were successful at macro level.[378] Credible monetary stabilization brought about a significant increase in the degree of certainty associated with both expected capitalized earnings from new investments and expected household income (cf. Cinquetti 2000: 162).

Bolivia's NEP had, *inter alia*, a substantial impact on the extractive economy. Given the overall disadvantageous terms of trade in the rubber economy as a consequence of Brazil's abrogation of rubber subsidies, the policy did not attempt to revitalize rubber trade. Rather, it provided the legal and macroeconomic framework for the expansion of Brazil nut exports.[379] Under a World Bank-sponsored program, credits were granted to the erstwhile rubber houses – which had long been involved in the exploitation of Brazil nut – so as to stimulate in-country processing. This boosted the rapid expansion and modernization of processing plants (*beneficiadoras*), above all in Riberalta. The town's strategic location at the confluence of principal rivers, along with its road connection to Cobija, Guayaramerín and La Paz, ensured its persistence as the region's center of the extractive economy. In a few years time and without major disruptions, Riberalta turned from northern Bolivia's rubber center to the focal point of Brazil nut trade. By the early 1990s the Brazil nut industry entered its first outright boom. As a result, competition for raw material increased, stimulating the industry to get hold of the resource base. The owners of large *beneficiadoras* bought up *barracas* from patrons who had lost the interest in their estates due to the rubber collapse (see also Chapter 4). The change of ownership took place in a juridical vacuum given the absence of an effective legal system governing land tenure.[380] Facilitated by the widespread recognition of customary land rights and a certain fatalistic attitude toward the business transactions of people who are commonly perceived as capitalists (*capitalistas*), *barracas* changed hands between patrons and firms.

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[378] Following the 10% cumulative decline in real GDP in the period 1980-85, Bolivia has sought to return to high rates of sustainable economic growth, with a steady reduction in poverty. Four successive governments have carried out the reform strategy and, by 1997, Bolivia had achieved strong gains on the inflation and external fronts, with the annual inflation rate dropping to less than 7% (IMF 1998: 1). In the same year, the IMF's Executive Board acknowledged that Bolivia had reached the "decision point" (at which it has completed the first stage of strong adjustment and reform) under the initiative for highly indebted poor countries (HIPC Initiative) by granting exceptional assistance to reduce its debt burden (IMF 1997: 274).

[379] *Decreto Ley №* 21060, for example, created favorable conditions for exporters which provided an important stimulus for investors eager to move their capital from the vanishing rubber industry to the emerging Brazil nut industry (Domínguez 1994: 22).

[380] State neglect of issues related to land tenure has a long tradition in Bolivia. In the pre-revolution years in the mid-20th century, for instance, it was reported that "titles and boundaries drift into a chaotic state of neglect. The government itself has abetted this system by handing out huge tracts with no serious provision for payment, use, or taxes" (Kernan (1951: 354).

While NEP and insecure land tenure affected the Brazil nut industry, recent macroeconomic distortions rather had a bearing on the palm heart industry. In the late 1990s, the Asian crisis spilled over to Latin America, destabilizing numerous national economies. The imported monetary and economic crisis was most pronounced in Brazil, with the devaluation of the *real* leading to a notable decrease in purchasing power. The problem was analyzed as follows:

> "Economic prospects in Latin America are being affected among other things by the political uncertainty that usually accompanies the presidential elections now taking place in several countries of the region. The *adjustment fatigue* in many of these countries, coupled with the consequences of recurrent external shocks leading to a dramatic deterioration of the terms of trade and to a substantial transfer of real resources to advanced countries, prompted some to question the benefits of both globalization and the process of structural reforms. Moreover, although markets have gained considerable discriminating capacity to assess prospects for different countries in a region, the fact is that *financial contagion* is still present. Unfavorable development in individual countries, even in those of relatively minor systemic importance, carry potential of spillover effects for the rest of the region" (Fernández 1999; emphases added).[381]

From a Bolivian perspective, it was rather the other way round. Contagion was imported from Brazil and spill-over effects seriously hit the palm heart industry (see Figure 3-4). As we will see below, Brazil is the main destination of palm hearts from northern Bolivia. Being a luxury good, palm hearts are less in demand in times of constrained household financial resources. Consequently, the regional palm heart industry suffered from shrinking Brazilian demand. But endogenous problems aggravated the crisis: at the turn of the 21st century, i.e. when most of the repercussions of the Brazilian crisis had been surpassed, the discontinuation of palm heart exports from northern Bolivia was chiefly attributed to container contamination problems (Peralta *et al.* 2000: 14). As rumor goes, there were several fatalities in Brazil due to a virulent bacterial infection that could be traced back to the consumption of Bolivian palm hearts. Bolivian exporters steadfastly stressed that propaganda by Brazilian competitors rather than actual contamination had to be blamed for the decrease in Brazilian palm heart imports. On the other hand, sanitary conditions in some of the canneries – in particular the forest-based among them – are rather precarious. Obviously, at least part of Bolivia's palm heart output does not meet international sanitary standards. The recent crisis notwithstanding, the palm heart industry had experienced a remarkable boom throughout most of the 1990s which Section 3.4 will focus on.

Rise of the Brazil nut industry

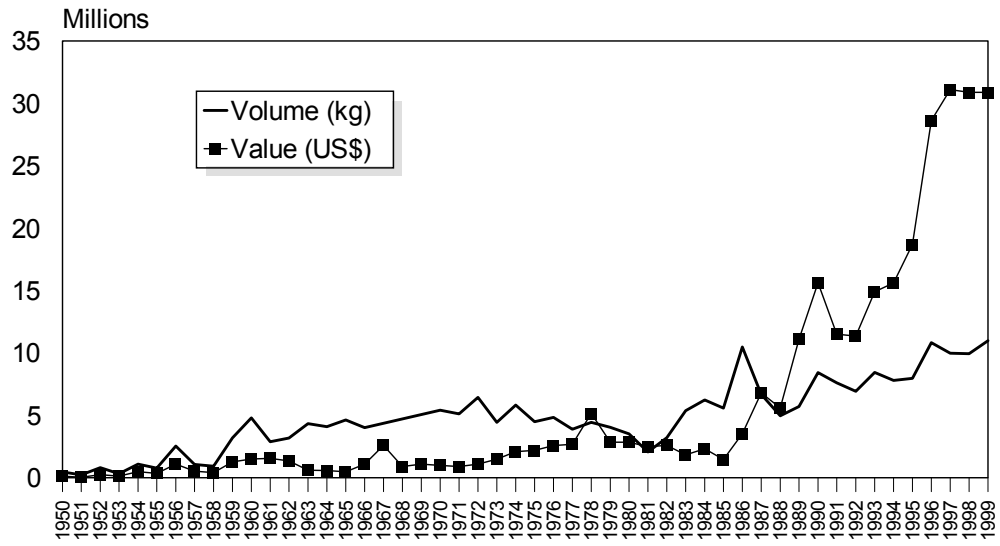
Structure and Performance

The expansion of Brazil nut production in the context of a rubber crisis had a precedent in the 1920s. The then slack rubber market urged rubber producers to explore new forest products as alternative sources of income. Following the introduction of Brazil nuts as an export commodity in the late 1920s, the early phase of processing saw only few enterprises involved. At the onset of World War II, *Suárez Hermanos* and *Seiler & Cía.* dominated in-country processing, with the export shares of shelled nuts and in-shell nuts amounting to 64% and 36%, respectively (Capriles and Arduz 1941: 98-9, cited in Pacheco 1992: 98). With the post-war disintegration of the House of Suárez in-country processing suffered a severe setback.

[381] The citation reflects a statement to the fifty-third meeting of the IMF Interim Committee by the Minister of Economy and Public Works and Services of Argentina, and Interim Committee member for the constituency consisting of Argentina, Bolivia, Chile, Paraguay, Peru and Uruguay.

During the 1950s and 1960s northern Bolivia chiefly exported in-shell nuts. Nonetheless, for most of the period 1950-1986 official export values of Brazil nut equaled or even outweighed those of rubber (see Figures 2-5 and 3-1).

Figure 3-1 Volume and value of Brazil nuts officially exported from Bolivia, 1950-1999.



Source: Based on Comité Cívico de Riberalta (1972), Bezy and Revuelta (1990), López (1993), Banco Santa Cruz (1998), Pacheco (1998), and CNF (1999).

Note: No export volume available for the period 1967-1969.

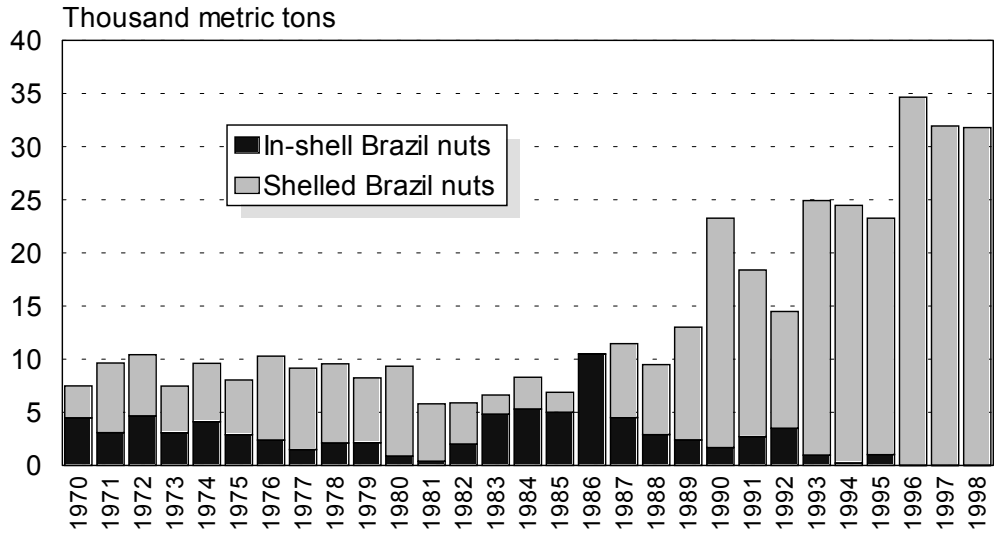
Between 1950 and 1986, official Brazil nut exports were equally important as those of rubber, annually averaging US$1.5 million and US$1.4 million, respectively (Figures 2-5 and 3-1). The year 1986 marked a clear turning point in that rubber entered its phase of final decline while Brazil nut exports were to experience a first boom. Though the period until 1986 has been viewed by many as being dominated by rubber, Brazil nuts were an equally if not more important pillar of the regional economy save for the period 1980-1983 and the years prior to the agrarian reform in 1953.[382] It needs to be recalled, though, that official statistics do not reflect the true magnitude of the trade in rubber or Brazil nut. The latter, for example, had long been illicitly traded to Brazil for various reasons: 1) domestic processing capacity was limited between the 1950s and the mid-1970s, while demand of the Brazilian shelling industry increased (CIDOB 1979a: 130-1); 2) by 1978 all Brazil nut exports from Bolivia were made via Brazil (Boero 1978: 495) as northern Bolivia was yet to be linked to the national road network; this stimulated contraband across the jungle border; 3) exchange rate distortions gave a further boost to clandestine trade.[383] This situation would gradually change

[382] Bolivian rubber exports after World War II have generally been overestimated, as even in the best times of rubber export the real values reached to US$ 5 million only (Salas 1987: 14). Long before the collapse of Bolivian rubber trade, collection of Brazil nuts thus was more than a "complementary activity" to rubber tapping as suggested by Assies (1997: 71). Even in the second half of the 1970s, i.e. at a time of high rubber prices, it was reported that "the annual income of a rubber tapper is approximately US$ 1,250, half of which originates from rubber tapping and the other half from the Brazil nut harvest" (Paardekooper 1978: 1).

[383] There is evidence that contraband of rubber and Brazil nuts were roughly of the same order in those years. Contraband of Brazil nuts was estimated to average 33% of overall production between 1956 and 1962 (Vivado 1984: 140). By the 1980s, this share hardly decreased, since the rigid stipulation of prices in Bolivian round table agreements rendered prices paid in the clandestine cross-border trade with Brazilian and Peruvian merchants far more competitive (Vivado 1984: 129). In general, "Bolivia's export figures have been lower than actual production, as previously a large percentage of their nuts were sold into Brazil for processing and shipped

with the expansion of Bolivia's processing capacity. By the end of the 1970s, four enterprises had established seven processing plants where the nuts were graded and packed for export.[384] A renewed crisis of the shelling industry in the first half of the 1980s was succeeded by the rapid recuperation and further expansion of domestic processing capacity (Figure 3-2).

Figure 3-2 Volume of in-shell Brazil nuts and the raw material equivalent of shelled Brazil nuts exported from Bolivia, 1970-1998.



Source: Based on INE (1989), Bezy and Revuelta (1990), Pacheco (1992), CNF (1998, 1999).

Note: The raw material equivalent of 1 kg of shelled nuts is 3.2 kg of in-shell Brazil nuts.

Bolivia's Brazil nut economy was characterized by fairly stable harvesting levels throughout the 1970s (Figure 3-1), but in-country processing underwent a profound transformation (Figure 3-2). The share of nuts processed domestically rose from 40% in 1970 to 93% in 1981. The respective remainder was exported in-shell to Brazilian processors, if not illegally trafficked in substantial quantities (CIDOB 1979a: 130-1). By 1980, five Brazil nut plants closed down, leaving a monopoly on shelling with the two remaining plants operated by *Hecker Hermanos*. The latter's relatively low production capacity forced most of the producers to export in-shell nuts to Peru or Brazil (Salas 1987: 21-2). In 1986, even *Hecker Hermanos* had to suspend shelling due to lacking liquidity.[385] The crisis of the Brazil nut industry in the first half of the 1980s thus coincided with the downturn in rubber production and Bolivia's general economic crisis.

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as Brazilian product" (Clay 1994: 30). Distortions of the exchange rate of the Bolivian *peso* or *boliviano* against the Brazilian cruzeiro stimulated illicit trade by the early 1990s.

[384] Three processing plants operated on behalf of the state-owned *Corporación Boliviana de Fomento* (CBF) in Riberalta, Cobija and Blanca Flor. The Riberalta-based *Hecker Hermanos* ran two plants in their own *barracas* at Conquista and Fortaleza. The remaining plants were established by Valerio Favaro ("Lourdes") in Riberalta and INDUSA in Cachuela Esperanza (CIDOB 1979a: 126). Apart from INDUSA, all enterprises delivered the nuts and hand-operated machines to mostly female laborers shelling the nuts at home, from where they had to be forwarded to the plants within 24 hours after shelling (CIDOB 1979b: 452).

[385] In addition to Brazil, in-shell nuts from Bolivia were exported in large quantities to Peru, in particular in the period 1985-88. Selling crude nuts to Peru had the advantage of getting cash dollars tradable in the black market which offered up to 23 times the official rate during Bolivia's years of hyperinflation. The situation reversed in the early 1990s when Bolivia became increasingly dependent on raw material imports from Peru (Domínguez 1994: 15, 21). Similar shifts occurred between Bolivia and Brazil, as we will see below.

As a result of Bolivia's New Economic Policy and a World Bank program promoting the Brazil nut industry, progressively higher exports of shelled nuts were realized during the second half of the 1980s. Along with an increase in the world market price, 10 processing plants opened in Riberalta by 1990 (Salas 1987: 21, Coesmans and Medina 1997: 150). With the processing capacity being progressively expanded, contraband of in-shell nuts dropped to insignificant levels (Pacheco 1992: 171).[386] The upsurge of the shelling industry was fuelled by decreased competitiveness of its Brazilian counterpart given the restrictive monetary policy and exchange rate fluctuations (Palacios 1998: 1). By 1998, the number of processing plants in Riberalta soared to 20 (Justiniano 1998). The resulting increase in the demand for raw material could no longer be met in Bolivia alone. Unlike previous years when crude nuts had to be exported to the neighboring countries, Bolivia's industry became increasingly dependent on in-shell imports from Brazil. From 1996 to 1998, about one fifth of the Brazil nuts processed in Bolivia originated from Acre and, to a lesser extent, Rondônia.[387] Since 1992, Bolivia has been the world's largest exporter of shelled nuts while Brazil continues to be the largest exporter of in-shell nuts. In terms of raw material equivalent, though, Brazil's share dropped from 59% of the total volume of Brazil nuts traded in 1992 to 37% in 1998. At the same time, Bolivia and Peru raised their world market shares from 36% to 50% and from 5% to 13%, respectively (Man-Producten 1997: 12, 1998: 12).

The Bolivian boom of Brazil nuts provides increasing income opportunities in both rural and urban areas. In Riberalta, employment opportunities enhanced notably, giving further momentum to the rural-urban migratory flow (see Chapter 4). In 1997, about 5500 persons, or about one-tenth of Riberalta's population, found permanent or temporary employment in the shelling industry (Coesmans and Medina 1997: 152). The largest share of this labor force is made up by *quebradoras*,[388] that is female workers who remove the seed coats by means of hand-operated tools (for related employment and income, see Section 5.4.2). At the beginning of this study, a good number of these jobs seemed to be threatened by the introduction of mechanized cracking. This prompted the question for the impact increased industrialization in the Brazil nut industry might have on both the collectors and the laborers of the processing plants. In the course of the study, however, it became apparent that this process would not materialize. Recent developments reveal that mechanized cracking will hardly replace manual shelling as practiced in the vast majority of the processing plants. From 1994 to 2000, the number of plants operating with mechanized cracking remained constant, with only 3 out of a total of around 25 plants having invested in the respective installations.[389] A recent comparison between the economic performance of mechanized and manual cracking showed

[386] In 1989, presumably one of the last years of significant contraband, the amount of Brazil nuts illicitly exported to Brazil was estimated at 6,000 metric tons or some 40% of overall production (MACA/BM 1990: 27).

[387] In 1997, for example, 9,833 metric tons or 491,676 boxes of shelled nuts were officially exported from Bolivia (CNF 1998). The raw material equivalent was about 1,720,000 boxes of in-shell nuts. With an estimated 470,000 boxes stemming from independent communities and 900,000 boxes from *barracas,* some 350,000 boxes must have been purchased from Brazil. These raw material imports became lucrative through adjustments of the Brazilian *real* against the US dollar and the resulting revaluation of the *boliviano*. In addition, the crisis in Acre's shelling industry deprived Brazilian producers from domestic outlets. Brazilian production dropped from 300,000 boxes in 1994 to 80,000 boxes in 1996 (Palacios 1998: 28).

[388] The number of *quebradoras* rose from 700 in the late 1970s (CIDOB 1979a: xiv) to around 1600 by 1992 (DHV 1993f: 30).

[389] The firms are the Riberalta-based Manutata S.R.L. and Amazonas S.R.L., and the Cobija-based Tahuamanu S.R.L.

that – based on real prices in 1998 – the former is not economically superior, with the costs amounting to US$1.20/lb. and US$1.21/lb., respectively (Palacios 1998: 102-9).

During the Brazil nut season (*zafra*) from December to March, most of the processing plants release their labor force which constitutes a substantial share of the about 5500 collectors setting out from town to gather Brazil nuts on a *barraca.* They supplement the around 800 collector families who live permanently on the *barracas*. In addition, some 6000 rural households gather Brazil nuts on their parcels in independent communities. About 1500 collectors from the latter, among them approximately 200 without access to Brazil nut resources in their resident community, also leave for the *barracas* (Stoian, in prep.). In summary, the Brazil nut industry provides jobs and income to 5500 persons in the processing plants and some 12500 collectors from both rural and urban areas. Furthermore, some 500 contractors and several hundred intermediaries, captains, and truck drivers ensure that the raw material reaches the processing plants in time. The Brazil nut industry thus evolved as the single most important pillar of the regional economy over the past decade. The recent boom benefits the region's rural settlements to widely varying degrees (Table 3-1).

Table 3-1 Main figures of the Brazil nut trade in the 163 rural settlements sampled in northern Bolivia.

	Annual Brazil nut production (# boxes)	**Mean production per settlement (# boxes)**	**Mean amount per gatherer household (# boxes)**	Average price in the *zafra* 1996/97 **(Bs. per box)**
<u>*Barracas*</u>				
Enterprise-run *barracas*	137,300	9807	111	19.3
Large patron *barracas*	118,450	5384	145	19.6
Small patron *barracas*	18,150	825	109	20.8
Barracas in transition	69,900	4660	111	22.6
<u>Independent communities</u>				
Peri-urban communities	8200	1171	42	35.8
Agrarian communities	1770	98	5	33.7
Agro-extractive communities	23,470	1174	38	34.1
Extractive communities	131,230	5249	145	34.2
Indigenous communities	22,050	2450	78	33.3
Rural sub-centers	223,500*	27,940	105	30.8

Source: Village Survey 1997. For the stratification of settlements, see Tables 4-1 and 4-2.

Note: The number of gatherer households was derived by adding the number of resident households to the number of gatherer households recruited from outside the settlements. One *boliviano* (Bs.) was equivalent to US$0.19 at the time of the survey. The size of a box of Brazil nuts is stipulated at 51*27*35 cm. At the transshipment point it typically contains 26 kg of in-shell nuts as opposed to the official weight of 22 kg (DHV 1993b: 32).

* This figure includes some 100,000 boxes sold by patron-like intermediaries from three rural sub-centers (Puerto Rico, El Sena, Conquista) who continue to control part of the Brazil nut flow from these settlements at prices little below those offered on the free market.

Barracas produce more Brazil nuts than independent communities, with average collectors gathering 120 boxes and 78 boxes, respectively (Table 3-1).[390] But extractive communities and rural sub-centers display production potentials similar to, if not exceeding, those of the most productive *barraca* types. As *barracas* along the Tahuamanu, Manuripi and Manurimi rivers have not been surveyed, production figures displayed in Table 3-1 slightly underestimate the true weight of the *barracas*. Taking into account the collectors' average production and their total number, overall production in 1997 encompassed about 900,000 boxes (66%) from *barracas* and some 470,000 boxes (34%) from independent communities.[391] The latter's share in 1992 was only 240,000 boxes, or an estimated 20-32% of

[390] DHV (1993b: 35) estimated collectors in independent communities to annually gather 57 boxes on average. This lower figure can be attributed to the disregard of the highly productive extractive communities along the Puerto Rico-Porvenir highway.

[391] The potential production of Brazil nuts in northern Bolivia is estimated at 90-126 thousand metric tons or 3.5-5.7 million boxes per year (DVH 1993a: 7, Palacios 1998: 77), depending whether to assume a weight of 22 or 26 kg per box. In reality, only around 0.75-1.2 million boxes were annually collected in the late 1980s and early 1990s (DHV 1993b: 35), rising to around 1.3 million boxes by the late 1990s (Palacios 1998: 77).

total production (DHV 1993b: 35).[392] Allowing for the fact that the 1997 harvest yielded more than double the volume of 1992, relative shares of *barracas* and independent communities have not altered significantly.

Though at a first glimpse the balance between *barracas* and independent communities seems unaffected, the absolute increase in Brazil nuts produced by independent communities underpins their increasing control of Brazil nut resources in areas closer to town and along the expanding network of roads. In fact, independent communities raised their overall output by expanding their area at the expense of the *barracas.* Pushed further upstream, the *barraca* sector could increase its production only be exploiting previously unexploited Brazil nut stands in the region's remotest pockets. Results from our survey thus clearly underpin the process of "democratization of the Brazil nut economy" (DHV 1993b: 36). These findings contradict the pessimistic impression of Assies (1997: 50) who saw independent producers relegated to a "residual role" given the vertical integration in the Brazil nut industry. This view, however, overestimates the direct gains from vertical integration. Rather than seeking access to cheaper raw material, enterprises purchased *barracas* to ensure a steady flow of raw material from the forest to their urban-based processing plants and to reduce their dependence on third parties (Palacios 1998: 19). Two points are important in this context. First, in a booming market with rather inelastic supply competition for raw material plays a key role.[393] In order to fulfill pre-season contracts (*ventas al futuro*), Brazil nut processors are willing to pay higher prices toward the end of the harvesting season. Second, even the modern processing plants face shortage of storage capacity and are therefore interested in making use of decentralized shelters close to the sources of raw material. While Assies (1997) overestimated scale and impact of vertical integration,[394] he failed to appreciate the ongoing conversion of *barracas* into independent communities that underlie today's higher share of independent communities (see also Chapter 4).

The main benefit of the 'democratization' process are higher returns on the part of independent collectors. In the Brazil nut season 1996/97, they received Bs.34.2 (US$6.6) per box, as compared to Bs.20.3 (US$3.9) paid to an average gatherer (*zafrero*) on a *barraca*. Large patrons and enterprises barely pay more than the minimum price stipulated by the tripartite agreement (see Section 2.10.5).[395] Patrons of small *barracas* and *barracas* in transition, though, top up these prices by Bs.1 and Bs.3, respectively. This is due to their competition for

[392] The divergent shares depend on whether the estimates of ABAN (1.2 million boxes) or former production volumes (750,000 boxes) are referred to (ibid.).

[393] That increasing competition in a booming NTFP industry results in higher raw material prices which benefit the extractors has also been observed in the vegetable ivory industry in western Ecuador (see Southgate *et al.* 1996: 77).

[394] The importance of vertical integration in the Brazil nut industry is overstated for two reasons. First, only one-third of the processing plants has purchased *barracas* and virtually none of them is self-reliant in the procurement of crude nuts. As enterprise-run *barracas* account for a mere 20% of the total Brazil nut output, all processing plants rely, albeit to varying degrees, on the purchase of crude nuts on the free market. Second, the ongoing process of reorganizing land tenure (*saneamiento de tierras*) brought to light that only a single enterprise can base its land claims on legal documents. Since about 1996, the *beneficiadora* owners have refrained from purchasing further *barracas* as the vast majority of patrons, too, lacks legal land titles.

[395] In accordance with the international Brazil nut price, price formation as negotiated between representatives of the *zafreros*, the producers and the Labor Ministry yields a starting wage per unit gathered which is raised when prices in the international market increase (Domínguez 1994: 31). In the season 1996/97, Bs.18 and Bs.20 were to be paid per box delivered to one of the collection points inside the forest (*payol*) and the river-based centers or other transshipment points of a *barraca (puertos de embarque*), respectively. The price difference allows for the average costs of intra-*barraca* transport. In the season 1997/98, *payol* and *puerto de embarque* prices were first stipulated at Bs. 20 and 22 but later raised to Bs.23 and 25, respectively.

labor with nearby communities. Independent producers can fetch higher prices by selling directly to a processing plant, if living close to town like the residents of peri-urban communities, or by reducing transaction costs through the delivery of whole truck loads, as made use of by larger extractive communities.

Distribution of benefits

We have seen in the introductory chapter that the prevailing picture of rubber tappers and Brazil nut gatherers is that of an exploited and miserably paid mass of temporary laborers that is grossly taken advantage of by grasping intermediaries, patrons, and entrepreneurs. However, the vast majority of related accounts is of impressionistic nature rather than rooting in sound microeconomic analysis. One of the few exceptions are the works of Barham and Coomes who dwell on the pyramid pricing structure of debt-merchandise contracts during the Amazon rubber boom (see 1996: 67). They argue that most of the rubber rivers were open to free trade, with the divergent prices reflecting the variation of transportation and transaction costs incurred and, in particular, the high risks involved (ibid.: 66-71). It seems that up to the present day the actual costs of intermediaries and patrons have largely been underestimated, with their allegedly disproportional gains resulting from the – admittedly often huge – discrepancy between purchase and sales prices. If however accounting for the actual costs, including the losses due to desertion, incapacitation by illness, and loss of freight during the transport, the prices paid to those at the very beginning of the marketing chain appear in a more favorable light. One of the key determinants in this respect is the remoteness of the extraction site and hence the transport costs incurred. In Brazil, for example, the price a Brazil nut gatherer fetches is "indirectly affected by the F.O.B. price in Belem and Manaus; that is, the more difficult the transportation to the export centers, the higher the freight and, consequently, the smaller the amount paid to the caboclo" (Woodroof 1979: 188). Still, a middleman may take undue advantage of the producers' lack of market information or their general ignorance of market factors. But in Bolivia he or she rarely pockets a disproportionate share of the product's sales price at the disembarkation point given the competition for raw material. This may first be illustrated by a cost-benefit analysis of the operations executed by a typical river trader purchasing Brazil nuts along the Manupare River (Table 3-2).

Table 3-2 Cost-benefit analysis of a river trader's involvement in the procurement of in-shell nuts during the three-month Brazil nut harvest in northern Bolivia.

Cost/benefit centers	Unit	Prices per unit (Bs.)	Total costs (Bs.)
Costs			
Purchase of Brazil nuts	4500 boxes	40	180,000
3 laborers (*marineros*)	3 months each	600	5400
1 kitchen staff (*cocinera*)	3 months	300	900
Medical care for staff	various	various	500
Fuel and oil	60 l gasoline per trip	2.8	1680
Maintenance and repair of boat and engine	various	various	1000
depreciation of engine	various	various	1000
Depreciation of boat and pontoon	various	various	1000
Total costs			**191,480**
Benefits			
Sale of Brazil nuts	4500 boxes	48	216,000
Sale of basic supplies	approximately 5% of Brazil nut sales		10,800
Total benefits			**226,800**
Profit (benefits-costs)			**35,320**

Source: Interview with Juan Zambrana, owner of "Motor Christian", on 26 January 1998

Note: The example, drawn from the Manupare River, is based on real prices in the season 1997/98. The pontoon hauled by the boat has a carrying capacity of 450 boxes of in-shell nuts. Ten trips are made per season between El Sena and Santa Rita. Prices paid to the producers averaged Bs.40 per box and the average sales price at El Sena was Bs.48 (down Bs.2 from the average price at the processing plants to account for road transport between El Sena and Riberalta). Financial costs do not accrue, as the river trader was advanced US$35,000 by a Brazil nut processor (*Urkupiña*), for which no interest was charged provided the agreed volume of Brazil nuts (4000 boxes) was delivered at the end of the *zafra*. One *boliviano* was equal to US$0.19 at the time of the survey.

Though simplified, the cost-benefit analysis shows that the purchase of raw material accounts for more than 90% of the costs (Table 3-2). The river trader's profit – including a gain from the sale of foodstuffs and other basic supplies in the magnitude of around 5% of the Brazil nut benefits[396] – was little less than 20% of the capital invested. If only accounting for the purchase and sale of Brazil nut, net profit amounted to Bs.5.4 per box, or 11% of the Riberalta

[396] Unlike the *barracas* where the sale of basic necessities to the rubber tappers may be an additional source of income for the patron, the river traders' supply of foodstuffs and the like is rather seen as a service function to establish bonds between them and the suppliers of Brazil nuts. Even on the *barracas* prices differ widely for the same items; often as a function of transport distance but time and again reflecting the patrons' strive for supplementary profit.

price. It needs to be stressed that the intermediary relies on own funds only to operate his boat whereas the bulk of the costs is covered through the *habilito.*

The next level in the marketing chain is that of the patrons. Their cost structure on the *barracas* is subject to huge variation given that they comprise a variety of production units ranging from those of small patrons owning a few hundred hectares via large patrons with *barracas* of several thousand hectares to enterprises whose properties may comprise several ten thousand hectares (see Chapter 4). Operating costs on the *barracas* not only depend on their size but also on the infrastructure available and, ultimately, on the patrons' willingness and capability to invest in its maintenance. In a 1992 survey, operating costs per box of Brazil nuts varied between Bs.7 and Bs.20 (DHV 1993b: 33). In the absence of a more recent similarly detailed cost survey at the *barraca* level and accounting for inflation, we can assume that operating costs of the patrons or *barraqueros* amounted to Bs.9-26 in the season 1997/98. As in the majority of *barracas* the 1992 costs hovered around Bs.9-11, the more recent costs were largely in the magnitude of Bs.12-15. If also accounting for the reimbursement of the *zafreros*, amounting to Bs.20-25 per box, total costs averaged Bs.32-40 per box.[397] Given that the patrons received around Bs.38-42 per box from the river traders, we can conclude that their net margins from trade in Brazil nuts were nil at worst and Bs.10 at best. It is probably safe to assume an average profit of Bs.5 per box similar to that of a river trader.

Before we reach to the level of the Brazil nut gatherers or *zafreros*, we need to address the functioning of the contractors (*contratistas*) who serve as a link between the former and the patrons. Over the past years, the contractors have gained importance in the Brazil nut economy (see Assies 1997: 51-2). For the most part, they have assumed the functions of the erstwhile *barraca* overseers (*capataces*) who used to live permanently on the 'rubber estates'.[398] After being supplied with advance payments by a patron or enterprise, the contractors are in charge of procuring raw material and labor. They in turn provide the *zafreros* with an advance that typically is equivalent to the reimbursement of half the amount of nuts expected to be delivered. Upon completion of the *zafra*, the contractors submit the crude nuts to the patron or enterprise, settle the accounts, and pay the balance between the *habilito* and the total reimbursement to the *zafreros*. The contractors typically earn Bs.2-3 per box and may have additional gains through the sale of foodstuffs. Their costs are highly variable, depending in large part on the performance of the recruited *zafreros*. Contractors are held responsible for the losses occurring on the *barraca*, which may result from the former's desertion or illness. Given these risks, net gains of the contractors are probably in the magnitude of Bs.1-1.5 per box and rise only in rare cases to Bs.2-2.5.

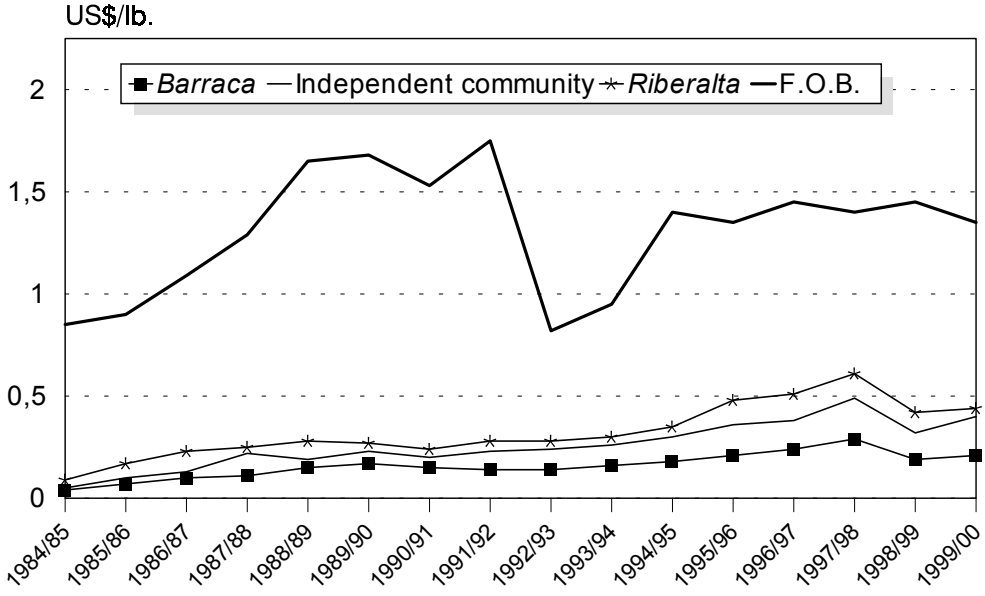
Though seemingly at the bottom of the socio-economic hierarchy on the *barracas*, the *zafreros* assume key roles in the production process. Depending on the settlement type and the related resource endowment, their annual output levels vary widely. Prices paid for crude nuts vary accordingly, albeit across the *barracas* only on a small scale. The negotiated minimum prices to be paid to the *zafreros* have increased considerably over the past fifteen years: average prices per box rose from US$1.4 in 1984-1989, via US$2.3 in 1990-94 to US$3.4 in 1995-99. Even better-off were Brazil nut gatherers in independent communities

[397] While small patrons and even a number of large patrons recruit *zafreros* themselves, large production units, in particular those run by enterprises recruit labor via contractors. In these cases, an additional Bs.2-3 per box have to be paid.

[398] Contractors are not a recent phenomenon associated with the vertical integration of the Brazil nut industry, as suggested by Assies (1997: 51-2). In fact, they were a characteristic feature of labor organization on the *barracas* well before (see Pacheco 1990: 6).

who can sell at the rates of the free market: their average earnings per box rose from US$2.4 in 1984-1989, via US$3.5 in 1990-94 to US$5.6 in 1995-99. Evidently, the recent Brazil nut boom benefited the industry, intermediaries and gatherers alike. The boom roots in the expansion of raw material output, increased processing capacity, and higher prices in the international market. Interestingly, both Brazil nut gatherers and patrons have benefited more than average from the recent price hike. Between the seasons 1984/85 and 1999/00, F.O.B. prices increased by 5.8% per year on average. Over the same period, the prices paid to gatherers or producers on the *barracas*, in independent communities, or in Riberalta increased annually by 14.5% on average (Figure 3-3). This is even more remarkable as these hikes refer to prices in US dollar which largely compensate for inflation;[399] and also because it contrasts findings from the Peruvian Amazon where, in the early 1990s, the profit gap between exporters and gatherers widened as international Brazil nut prices increased (Domínguez 1994: 34).

Figure 3-3 F.O.B price of Brazil nuts from northern Bolivia, and prices paid to the gatherers by the patrons on the *barracas*, by itinerant traders in independent communities, and the processing plants in Riberalta, 1984/85-1999/00.



Source: Own elaboration based on analysis of 'gray' literature and interviews with key persons.

Note: The F.O.B price refers to the average price of shelled nuts. Prices paid to the gatherers are based on boxes of crude nuts of about 22 kg each. These were converted in US dollar per pound by assuming a raw material equivalent of 3.2 kg of crude nuts for 1 kg of shelled nuts.

The F.O.B. price of Brazil nuts is subject to pronounced fluctuations, even though it has been rather stable in the second half of the 1990s (Figure 3-3). Prices paid to the gatherers or producers, on the other hand, have experienced a steady increase over the past fifteen years, even if accounting for inflation. Nonetheless, gatherers and patrons alike blame the processing plants for not raising the prices significantly in case of short-term hikes in the international market. They are backed by researchers who claim that "the feudal contract system by which the disenfranchised gatherers are bonded to harvest the nuts means that any

[399] Changes of the exchange value of the *boliviano* to the US dollar over the past fifteen years occurred typically in the magnitude of the inflation rate.

benefits of high prices are not passed onto the gatherers" (Wickens 1995: 32). However, these notions fail to acknowledge that usually the enterprises do not make downward adjustments either when F.O.B. prices drop.[400] It is but entrepreneurial reason when firms seek to raise their reserves in 'fat' years so as to be able to maintain the production process in 'lean' years along with reasonable salaries and prices. The ignorance of such economic essentials leads to gross misunderstandings of the actual cost-benefit situation of a given enterprise. The considerable discrepancy between F.O.B. prices and the Riberalta prices paid to the gatherers/producers are misinterpreted as symbolizing the excessive gains of the entrepreneurial class.[401] The facts however are different: even in years with a good price on the world market, such as 1997/98, the profit after taxes of a typical processing plant is rather modest (Table 3-3).

Table 3-3 Cost structure and profit of a typical processing plant for Brazil nuts in Riberalta, based on costs for one pound (lb.) of shelled nuts in 1998.

Raw material costs			Personnel costs			Other costs		
Type of costs	Bs.	%	Type of costs	Bs.	%	Type of costs	Bs.	%
Raw material	0.65	45.8	*Quebradora* wages	0.12	8.3	Packing	0.05	3.8
Raw material loss	0.07	5.1	*Quebradora* security	0.02	1.3	Transport	0.07	4.5
			Other laborers	0.08	5.2	Commissions	0.07	4.9
			Administrative staff	0.04	2.7	Financial costs	0.03	2.0
						Depreciation	0.02	1.4
						Taxes	0.05	3.8
Sub-total	0.73	50.9		0.25	17.5		0.29	20.4
Grand total	**1.27**	**88.7**	**F.O.B. price**	**1.43**	**100**	**Profit after taxes**	**0.16**	**11.3**

Source: Adapted from Palacios (1998: 105-6).

Note: Last line is independent from column headings. Percentages refer to F.O.B. price. One *boliviano* (Bs.) was about US$0.19 at the time of the study. Slight divergences are due to rounding.

Raw material purchases account for 57% of the total costs of a typical *beneficiadora*, while personnel and other costs make up 20% and 23%, respectively (Table 3-4). These costs combined account for 89% of the F.O.B. price. The remaining 11% constitute the profit after taxes. Thus, there is no evidence for excessive gains on the part of the processing plants for Brazil nuts. Though *quebradoras* make up for only around one-tenth of the total costs, they

[400] An exception was the season 1998/99 when a short-term drop of the international Brazil nut price was used to justify a massive cut of crude nut prices. In view of the disproportional price hikes of previous years, this can be interpreted as normalization of the raw material market, notwithstanding the hardship for the gatherers involved.

[401] An example for such an impressionistic view is the following calculation: "... out of the world market price of a kilogram of shelled nuts, 16% goes to the *zafrero*, 11% to the *barraquero*, and 8% to the *quebradora*. The remaining 64% consists of operation costs of the processing plants, transportation costs, intermediation [i.e. transaction] costs, and profits. Though plant-owners complain a lot and would make one believe that they operate at a loss, this calculation shows that they pocket a substantial income from nuts and this explains why the number of *beneficiadora* increases and existing plants expand" (Assies 1997: 59).

constitute an important group in terms of employment and income formation in peri-urban households (see Section 5.4.2). Since the early 1990s, piece-work rates paid to the *quebradoras* have risen significantly due in large part to successful union campaigning (*lucha sindical*) (Coesmans and Medina 1997: 155). On the other hand, their gains relative to the F.O.B. price have remained constant (Table 3-4).

Table 3-4 Reimbursement for the shelling of Brazil nuts in Riberalta's processing plants for Brazil nuts in the period 1987-2000, by quality class.

Year	1st class (Bs.)	2nd class (Bs.)	3rd class (Bs.)	4th class (Bs.)	5th class (Bs.)	Income per kg (Bs.)	Share of F.O.B. price (%)
1987	0.35	0.15	0.08	0.05	0.03	0.31	6.6
1989	0.45	0.20	0.08	0.05	0.03	0.40	3.3
1990	0.50	0.25	0.20	0.15	0.10	0.45	3.8
1991	0.65	0.35	0.25	0.20	0.10	0.59	4.8
1992	0.71	0.38	0.27	0.22	0.11	0.64	4.2
1993	0.84	0.40	0.27	0.22	0.11	0.75	9.7
1994	0.85	0.40	0.30	0.23	0.11	0.76	7.9
1995	0.95	0.40	0.30	0.23	0.11	0.85	5.7
1996	1.10	0.52	0.35	0.27	0.13	0.98	6.5
1997	1.21	0.52	0.35	0.27	0.13	1.08	6.5
1998	1.25	0.52	0.35	0.27	0.13	1.11	7.0*
1999	1.25	0.52	0.35	0.27	0.13	1.11	6.9
2000	1.25	0.52	0.35	0.27	0.13	1.11	6.3

Source: Own elaboration based on internal documents and interviews.

Note: 'Income per kg' is based on an average *quebradora* producing 85% of first-class and 15% of second to fifth class nuts (cf. DHV 1993f: 31). For the distinction of quality classes, see footnote 575. No data available for 1988.
*The 8.3% mentioned in Table 3-3 refer to the slightly higher wages paid in the enterprise *Manutata S.R.L.*, whereas the 7.0% constitute the average of all Riberalta-based processing plants.

From 1987 to 2000, piece-work rates of *quebradoras* have increased by 10.3% annually (Table 3-4). Their relative gains of F.O.B. prices, averaging 6.1% if disregarding social security benefits which vary across the *beneficiadoras*, depict a less pronounced upswing. Accounting for inflation – the rates in Table 3-4 refer to *bolivianos* – the rise of wages did only slightly exceed the long-term trend of the inflation rate, and in some years even fell short of it (cf. IMF 1998: 1).

Having analyzed the entire marketing chain of Brazil nuts within Bolivia, ranging from the gatherer via contractors/patrons and/or itinerant traders to the Riberalta-based *beneficiadoras*, we can sum up the distribution of benefits (Table 3-5).

Table 3-5 Distribution of benefits among the principal market participants along the domestic marketing chain of Brazil nuts from northern Bolivia, based on the prices of one pound (lb.) of shelled nuts in 1997/98.

Market participants	Purchase price (US$/lb.)	Sales Price (US$/lb.)	Profit (US$/lb.)	Share of F.O.B. price (%)
Dependent gatherer (*zafrero*)	n.a.	0.29	0.29	20.3
Independent gatherer	n.a.	0.49	0.49	34.3
Contractor	0.29	0.32	0.03	2.1
Patron	0.29	0.49	0.20	14.0
Itinerant trader	0.49	0.61	0.12	8.4
Processing plant	0.61	1.43	0.16	11.3
Quebradora	n.a.	n.a.	0.12	8.4

Source: Own elaboration.

Note: Prices refer to the average F.O.B. price of shelled nuts of US$1.43 per pound (lb.) in 1997/98. Conversion of *bolivianos* to dollars is based on a rate of US$0.18/Bs. The raw material equivalent for earlier stages of the marketing chain is 3.2 kg of crude nuts for 1 kg of shelled nuts. The share of a *quebradora* refers to an average piece-rate wage plus social security benefits. Profit stands for gross margins (balance between purchase and sales price) except for the processing plants where it denotes profit after taxes (cf. Table 3-3); n.a. = not applicable.

Among the stakeholders of domestic Brazil nut production, the gatherers pocket the highest shares per unit of the F.O.B. price; they are followed by patrons, processing plants, *quebradoras*, itinerant traders, and contractors (Table 3-5). In absolute terms, however, the picture changes according to the volume gathered, processed, or traded. As the transactions of firms and intermediaries involve quantities of Brazil nuts that far exceed those of the gatherers, there is a tendency to view them as disproportionally benefiting from Brazil nut trade. But an analysis of benefit capturing should focus on the relative gains per production unit rather than on economies of scale. As this is rarely the case, widely held assumptions about the distribution of benefits along NTFP marketing chains tend to be erroneous. As a matter of fact, Brazil nut gatherers in Bolivia received an average 14-34% of the F.O.B. price throughout the 1990s, depending on whether they delivered the nuts as dependent collectors to the patron of a *barraca*, as independent collectors in a community to an itinerant trader, or directly to the urban-based processing plant. This is in sharp contrast to the 3.5% of F.O.B. Brazil reported as share of nut gatherers in the neighboring country (see Clay 1997a: 270). The wide variability of the shares captured by their Bolivian counterparts suggests that any notion of a single percentage across various types of extractors is mistaken. If not focussing on the average of a whole decade and allowing for the diversity of gatherers, as in the above example, but addressing a single year and a specific type of gatherer, even more erroneous – but perhaps politically wanted – results can be produced. In the *zafra* 1991/92, for example, the *payol* price on a *barraca* accounted for a mere 6.3% of F.O.B. Arica.[402] Focussing however on the *zafra* 1997/98 and on a gatherer delivering directly to a processing plant, this share rises to an impressive 46.9%. Though dealing with unmistakable 'facts', these few

[402] The bulk of Brazil nuts from Bolivia are exported via the Chilean port of Arica.

examples illustrate that there is ample scope for making 'worlds' in accordance with personal likes or dislikes, as well as scientific and political ambitions (cf. Section 1.3.2).[403]

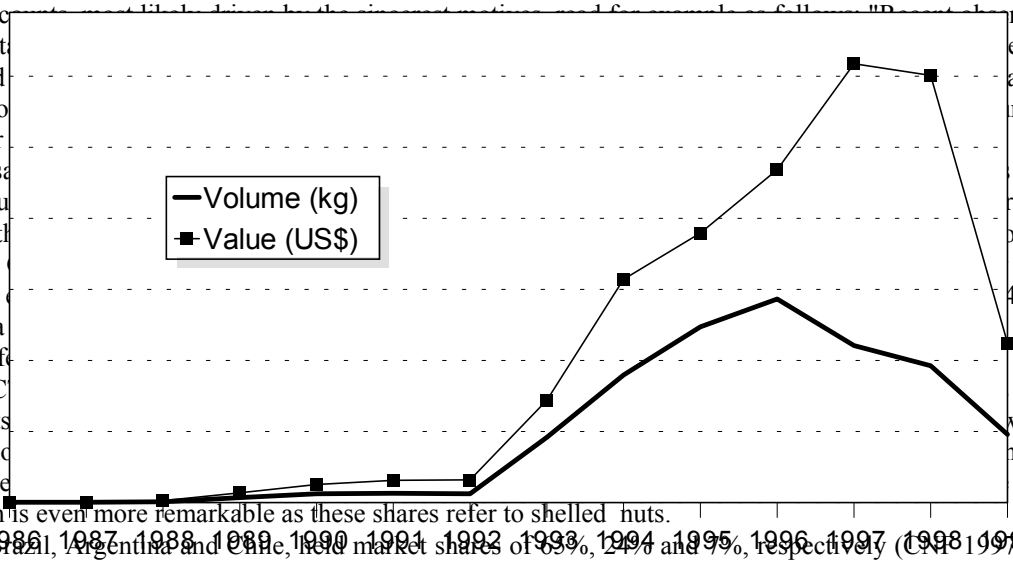
In fact, there is little evidence that the distribution of benefits in Bolivia is skewed toward the upper end of the marketing chain. On the contrary, when accounting for the varying inputs, outputs, and risks involved, benefit sharing appears rather equal. Even if allowing for the entire marketing chain up to the final consumer in Europe, disproportional shares can hardly be detected. Brazil nut gatherers receive between 5-17% of the final sales price, depending on the type of retail store and the purchasing party.[404] These figures contrast sharply the prevailing picture of allegedly disproportional shares of those who are at the very beginning of an NTFP marketing chain. Relating to Chapter 1.3.2, it seems that in an attempt of 'worldmaking' 'facts' are combined that seemingly substantiate the notion of NTFP extractors as being grossly exploited. Rather than actual 'worlds' with a right of their own, these 'worlds' tend to be wrong as many are based on deficient or biased 'facts'.[405] The examples cited in this section demonstrate that actual shares of NTFP extractors can be calculated 'down' by referring to the least advantageous situation irrespective of its actual relevance. If wrong 'worlds' are to be avoided, we need an unbiased view of economic realities and necessities of the various parties involved in NTFP marketing.

Emergence of the palm heart industry

Structure and Performance

In addition to the strongly increased importance of Brazil nut, another non-timber forest product made its career in northern Bolivia, namely asaí (*Euterpe precatoria*). Hearts of this single-stemmed palm find ready markets in Brazil, Argentina and, to a lesser extent, some European countries and Chile (CNF 1997).[406] Palm hearts are extracted during eight months of the drier period between April and November, i.e. during the months when rubber used to be tapped. Exports provide high returns to the main production areas in Santa Cruz Department and the northern Bolivian Amazon (Figures 3-4 and 3-5).

Figure 3-4 Volume and value of palm heart officially exported from Bolivia, 1986-1999.



[403] Related acc… rvers have not hesit… elf is miserable and… ason, they live in fo… rring debts for their …

[404] The final sa… sold in German su… rst, a dependent gath… old at US$12.6 in a … who delivered the … 45 as compared to a …

[405] Not all refe… Clay (1997a). UNC… paid for Brazil nuts… vn to extractors who… ntrast starkly to rece… (see above), which is even more remarkable as these shares refer to shelled nuts.

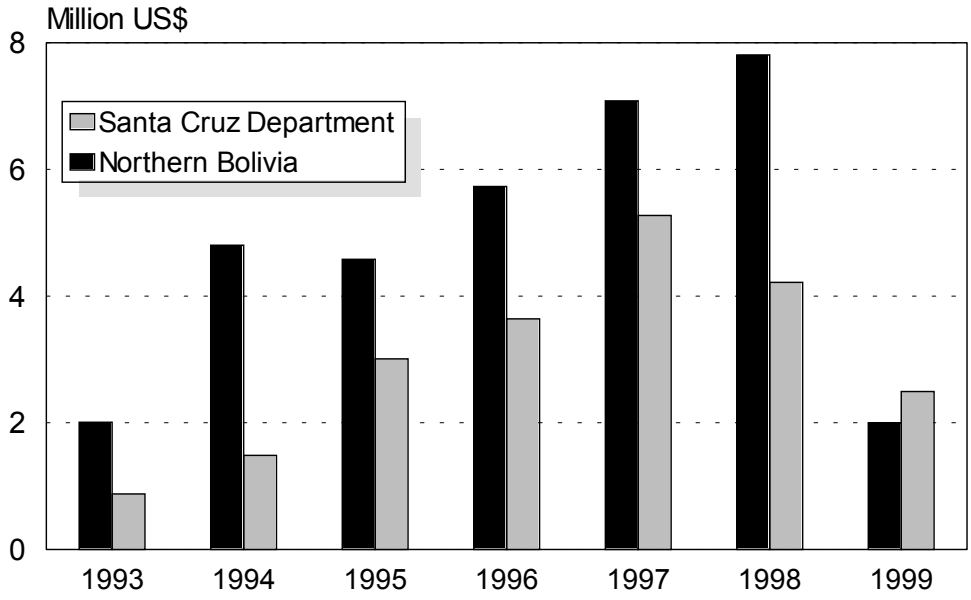
[406] In 1996, Brazil, Argentina and Chile, held market shares of 63%, 24% and 7%, respectively (CNF 1997), as compared to 67%, 18%, and 12% in 1993 (CNF 1994).

Source: Own elaboration based on CNF (1997, 1998, 1999) and CFB (2000a: 2).

Throughout the 1980s palm hearts were exported from Bolivia on a small scale but exports have surged dramatically by the late 1990s (Figure 3-4). Recently, however, the industry has suffered a severe setback, with palm heart exports dropping by almost two-thirds of their former value. As mentioned before, the drastic decline was first due to the economic crisis in Brazil, leading to reduced demand from the principal importing country which later on was aggravated by sanitary problems. Northern Bolivia and, to a lesser extent, the Department of Santa Cruz have been the principal producing regions (Figure 3-5). Out of a total of 26 canneries operating in northern Bolivia in 1997, 19 have been established in 1996 and 1997 alone (Stoian and Hofmann, in prep.). Northern Bolivia's canning industry relies exclusively on palm hearts from wild stands of *E. precatoria*, as does the industry in Santa Cruz Department. But it needs to be borne in mind that the statistics for Santa Cruz include palm hearts extracted from peach palm (*Bactris gasipaes* H.B.K.) plantations in Cochabamba Department.[407]

[407] Local producers are encouraged to cultivate peach palm instead of coca (*Erythroxylum coca* Lam.). The palm can first be harvested after 18 months and thereafter in intervals of six to seven months. Figures on the actual extension of the plantations in 1997 range from 1187 ha (Rodrigo 1998: 58) to 3321 ha (Banco Santa Cruz 1998: 94). Production is projected to surge to 10-15 thousand metric tons of palm hearts in the near future, provided the targeted 5400 ha can be accomplished (Anonymus 1997: 6).

Figure 3-5 Value of palm heart officially exported from northern Bolivia and Santa Cruz Department, 1993-1999.



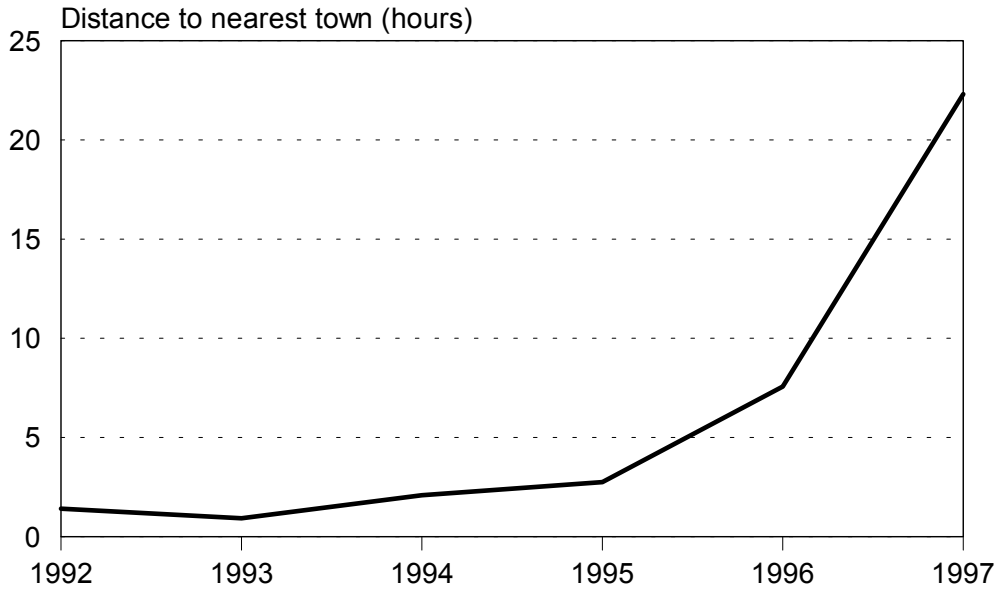
Source: Own elaboration based on CNF (1997, 1998, 1999) and CFB (2000a: 2).

Note: Total value of 1999 is confirmed but regional shares are estimated.

Between 1993 and 1998, northern Bolivia and Santa Cruz Department accounted for 63% and 37%, respectively, of the total export value of palm hearts (Figure 3-5). Though the 1999 shares have not yet been confirmed, it seems likely that the export values of Santa Cruz outweighed those of northern Bolivia for the first time. Compared to the Departments of Santa Cruz and Cochabamba, the palm heart industry of northern Bolivia is more contingent on the Brazilian market what largely explains the latter's more severe decline. Similar to rubber and Brazil nut, official statistics underestimate the true value of exports. In 1997, for instance, palm hearts worth US$7.1 million were officially exported from northern Bolivia. In contrast, an in-depth study of the region's palm heart industry suggests a value of US$8.2 million (Stoian and Hofmann, in prep.).

The regional palm heart industry was initially established in town. Raw material was procured from surrounding forests, most of which are located within the sphere of independent communities. Their residents, however, were not necessarily the main beneficiaries in the thriving palm heart business. An emerging system of work crews recruited from urban areas resulted in competition for raw material. Given the open-access regime which largely governs the use of palm hearts, proper management techniques were hardly developed. The single-stemmed nature of *E. precatoria* implies the palm's death upon removal of its heart. Irrespective of their urban or rural background, collectors tend to remove all mature individuals accessible. As a result, increasingly distant places need to be penetrated to reach to unexploited stands (Figure 3-6). Quality requirements impose the maximum distance from the road or riverside, as palm hearts are to be processed within three days after cutting.

Figure 3-6 Mean travelling distance between new palm heart extraction sites and towns in the northern Bolivian Amazon, 1992-1997; based on a sample of rural settlements (n=163) throughout the region.



Source: Village Survey 1997.

Note: Mean travelling distance refers to the typical duration of road and/or river transport from the sites where extraction commenced in the respective year to the nearest town.

Palm heart extraction in northern Bolivia had commenced close to the urban centers, in particular surrounding Riberalta where the first canneries had been established in the early 1990s. The amount of processed palm hearts rose from less than half a million in 1993 to more than seven million in 1997 (Hofmann 1997: 38, Stoian and Hofmann, in prep.), resulting in intense competition for raw material, among other things. With the new palm heart canneries occupying progressively remote sites, new extraction sites became ever more distant from town (Figure 3-6). The outward movement of the palm heart industry was necessitated by the increasing number of entrepreneurs striving for participation in the lucrative business rather than the depletion of wild *Euterpe* stands in urban surroundings (Stoian and Hofmann, in prep.).[408] Small rural canneries were founded by patrons in search for additional gains from their *barracas.* Medium and large factories, on the other hand, tended to be opened by large processors of Brazil nuts. By 1997, most of the sites apt for palm heart processing were occupied (Hofmann 1997: 93).

In 1997, the palm heart industry of northern Bolivia processed 7.3 million palm hearts, employing some 600 mainly unskilled and semi-skilled laborers recruited from town rather than from the local communities (Hofmann 1997: 38-41). With few factories employing gatherers, raw material is purchased from intermediaries and, to a lesser extent, from casual gatherers. The quantity gathered depends on the type of collector, as well as on access to the resource base.[409] Urban and rural collectors supplied 22% and 78% of raw material,

[408] From 1995 to 1997, the output of urban canneries virtually doubled, with their number increasing from three to nine (ibid.).

[409] Casual laborers hired by contractors and taken to non-depleted stocks in open access areas harvest between 50 and 100 palm hearts a day. Depending on their assignments, they gather anything from few hundred up to 7000 palm hearts a year. Forest-based collectors tend to have less access to palm heart resources. They gather

respectively. Next to the Brazil nut industry, the palm heart industry became the second most important source of income and employment after the demise of Bolivian rubber trade.

It needs to be emphasized that palm heart extraction is not practiced in a sustainable fashion. On average, extraction lasts 3.5 years in a given settlement before stocks are depleted. Recovery of the resource base to allow second cuts of similar magnitude are anticipated to take at least ten years (Johnson 1996: 10).[410] Though asaí is far from being threatened by extinction,[411] it is prone to be harvested to levels that impede a steady flow of income. Recently, the versatility of the palm heart market proved even more restrictive than the relatively long recuperation period. In the absence of a significant domestic market, the palm heart industry has suffered a severe setback because of slack international demand. Thus, the palm heart economy alone cannot offset the collapse of the rubber industry. But coupled with timber extraction, two alternative dry-season activities have emerged that temporarily made up for most of the rubber-related income loss.[412]

Distribution of benefits

Principally there are two types of palm heart extractors in northern Bolivia, viz. independent and dependent gatherers (*palmiteros*). The latter are hired by urban-based contractors or patrons, while independent extractors harvest palm hearts on own parcels or in adjacent open-access areas. Independent extractors can be distinguished in road and river-based gatherers. The latter usually sell via a river trader to a rural canning factory since they lack means of transport. Road-based extractors who gather palm hearts independent from a patron or contractor tend to sell them to itinerant traders, if not directly to a cannery when living in its proximity (Figure 3-7). In 1997, independent extractors were paid Bs.1.5-2.5 (US$0.29-0.48) per palm heart, depending on the number of intermediaries involved.

Dependent extractors fetched Bs.1-1.5 (US$0.19-0.29) per palm heart as the intermediary they depend on subtracts his share. Dependent extractors can be distinguished in those residing on a *barraca* where they collect palm hearts on behalf of a patron, and those signing up with an urban-based contractor (*contratista*) who is in charge of labor recruitment, transportation, and delivery of the raw material. In the latter case, palm hearts are extracted from open-access resources in uninhabited areas along the principal roads and rivers. Contractors agree on pre-harvest sale arrangements with the canneries which provide them

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between 10 and 60 palm hearts per day or 100 to 5000 palm hearts a year. If not marked otherwise, the figures in this section are derived from the Peri-Urban Household Survey 1998 and the Rural Household Survey 1998/99.

[410] Estimates of the maturation period of *E. precatoria* in wild populations vary widely, ranging from eight years (Moraes 1996: 25) to more than hundred years (Peña 1996: 64, PROMAB 1998: 6). When cultivated, it lasts from five or six years (Villachica 1997) to a maximum of twelve years (cf. Kahn and de Granville 1992: 132). This is confirmed by observations from the field where planted individuals had reached a height of up to five meters two years after being transplanted as nursery seedlings of 30 centimeters.

[411] "*Euterpe precatoria* is extremely widespread, perhaps the most so of neotropical palms; even local overharvesting will not place it in any danger of extinction. It can occur in various habitats, from the várzea forests of the Amazon region to the steep 2000 m slopes of the Andes" (Kahn and Henderson 1999: 188).

[412] In 1997, rural households typically earned Bs.500-2100 (around US$100-400) from palm heart extraction and anything between nil and Bs.5000 (about US$1000) in a single logging operation. Since the latter are of intermittent character and given that only a relatively small number of households sells timber in a given year, the average annual timber-based income amounts to around Bs.400 (about US$75). Agriculture-based income is also subject to high variability, ranging from nil if geared to mere subsistence to more than Bs.5000 (about US$1000) in households specialized on cash crop production (Stoian, in prep.).

with cash, part of which in turn they advance to the gatherers. This system is virtually identical to that of the Brazil nut harvest which has been described earlier. In exceptional cases, dependent extractors succeed in bypassing a contractor or patron through clandestine sale to an itinerant trader. Some *barraca*-based gatherers are even permitted to sell independently from their patron, in particular on those *barracas* where the patron is chiefly concerned with the Brazil nut harvest.

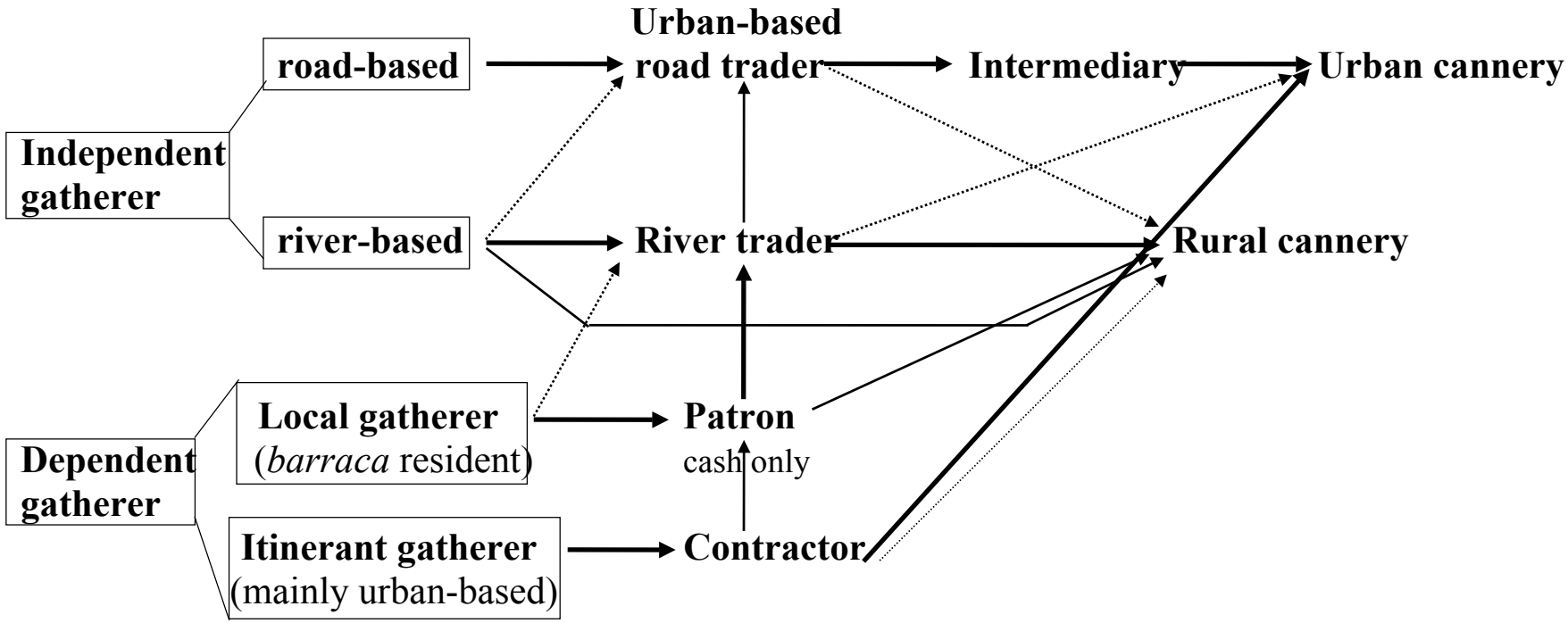
Daily output varies widely across the various types of extractors, depending on density and distance of the asaí stands, means of transport, and individual performance. One backload typically consists of 20 palm hearts weighing 20-30 kg. Under favourable conditions, e.g. when gatherers harvest unexploited stands near a roadhead or transshipment point, they may deliver three to five backloads, or 60-100 palm hearts a day. As these favorable sites become ever more scarce, most of the gatherers have to content themselves with a daily yield of 20-40 palm hearts. To cover the opportunity costs of labor, independent and dependent extractors need to collect 8-13 and 13-20 palm hearts per day, respectively.[413] With an average *palmitero* gathering about 30 palm hearts a day (Stoian, in prep.; see also Table 5-26), participation in the palm heart harvest pays off even in the case of dependent extractors.

On more remote sites a crucial role accrues to river traders who often interact with urban-based intermediaries. As shortage of liquidity is common among all market participants, those offering prompt cash payment are much sought-after business partners. This is especially true of urban-based intermediaries, guaranteeing on-time payment to itinerant traders who supply them with the raw material from the rural areas. Though these intermediaries claim their share, many itinerant traders accept the latter's somewhat lower prices rather than being subjected to a cannery's delayed payment. Likewise, small canneries may export part of their produce via a large factory when they are offered immediate payment.[414] Again, it is the shortage of liquidity that compels weaker market participants to opt for prompt cash payment and accept the resulting loss of parts of their profit.

[413] A daily wage excluding meals (*jornal seco*) was Bs.20 (US$3.8) in 1997. Palm heart prices paid to the gatherers are those mentioned before.

[414] Hofmann (1997: 28) distinguishes three sizes of palm heart factories, viz. small (producing less than 200 thousand palm hearts per year), medium (200-400 thousand), and large (400-600 thousand). For a detailed overview of their marketing chain from Bolivia to Brazil, see Stoian and Hofmann (in prep.).

Figure 3-7 Marketing chain of palm hearts in northern Bolivia.



Source: Stoian and Hofmann (in prep.).

We have seen in the case of the Brazil nut industry that there is a huge discrepancy between the distribution of benefits in Brazil as reported in the literature and the actual situation in northern Bolivia. As to the palm heart industry, the only detailed studies available are those of Pollak *et al.* (1995) for Brazil and that of Hofmann (1997) for northern Bolivia. Based on a 1992 study of the palm heart industry in Pará, Pollak *et al.* (1995) suggest that gatherers, intermediaries, and canning factories received a mere 1-3%, 1-3%, and 8-9% of the retail price, respectively; in contrast, the 1997 study from northern Bolivia yielded respective shares of 2-6%, 4-6%, and 13-21% (Table 3-6). Consequently, the shares in northern Bolivia outweighed those of Pará by the factor of 2 to 3. Two reasons chiefly explain this discrepancy: First, the low dollar values in 1992 reflect the then overvaluation of the Brazilian currency. Second, the demand for palm hearts has increased since 1992 (cf. Clay 1997b), reflected in increased prices.

Table 3-6 Distribution of benefits in the palm heart industry of northern Bolivia along the principal marketing channel from Bolivia to Brazil.

Market participants		Gross returns (US$/jar)	Share of final sales price (%)	Trade margin (US$/jar)
Extractor:	Bolivia	0.23-0.57	2-6	0.08-0.42*
Intermediary:	Bolivia	0.41-0.57	4-6	0.07-0.34
Palm heart processor:	Bolivia	1.3-2.1	13-21	0.18-0.44
Distributor:	Bolivia/Brazil	2.4-3.5	24-35	0.67-1.20
Wholesaler:	Brazil	4.8-6.0	48-60	3.0-4.2**
Retailer:	Brazil	10.0	100	2.2-3.4**

Source: Based on Cannery Survey 1997 (Hofmann 1997; Stoian and Hofmann, in prep.).

Note: Returns and margins refer to the price of a jar of palm hearts or its raw material equivalent (on average, one jar contains 1.2 palm hearts); they are based on real prices in 1997, i.e. the year before the Brazilian monetary crisis brought about the drastic devaluation of the Brazilian currency;[415]

* Trade margin is calculated as the balance between gross returns and opportunity costs of labour, which are based on the daily wage of US$3.8 in 1997. With an average extractor gathering 30 palm hearts per day or the quantity needed for 25 jars, opportunity costs of labour are US$0.15 per jar.

** Estimate based on inflation-adjusted costs of palm heart distribution firms in Pará (cf. Pollak *et al.* 1995: 368).

Most of the profit in the trade of palm hearts from northern Bolivia to Brazil accrues to wholesalers and retailers in Brazil (Table 3-6). Their trade margins amount to 70% of the final sales price. Inside Bolivia, however, trade margins of all market participants combined are a mere 7% of the final sales price. The low margin is shared by gatherers, intermediaries and canning factories, gaining respectively US$0.28, 0.15 and 0.26 per jar. In other words,

[415] The *real* dropped from the equivalent to US$0.93 in June 1997 to US$0.56 in June 1999. Consequently, more recent wholesale and retail prices in US dollar would be considerably lower.

around 40% each are captured by gatherers and canneries, while intermediaries gain about 20% of the overall trade margin in Bolivia. Referring to the palm heart industry in Brazil, Clay (1997b: 284) holds: "Most of the value added to palm heart is captured far from the forest (Clay 1996). Thus extractors earn the least and foreign buyers and retailers capture the most value added to palm heart, with a progressively larger share earned by those intermediaries closest to the consumer." As right Clay is with respect to the disproportional benefits captured at the upper end of the marketing chain, as wrong he is concerning the margins of the extractors. This is even more astonishing as he is amply drawing on the study by Pollak *et al.* (1995) which could have taught him differently. Regrettably, this sort of 'layman economics' is far too prevalent in the literature on NTFPs and the related benefit sharing. The basic error is to conclude from the extractors' low shares of the final sales price that they capture the least benefits.[416] As shown for both the Brazil nut and palm heart industries of northern Bolivia, extractors even rank highest when comparing the shares per production unit among domestic market participants.

These calculations illustrate that inside Bolivia there is little scope to increase benefit capturing on the part of the gatherers. Domestic intermediaries not only fulfil indispensable service functions but also capture a relatively small share of overall benefits. In addition, many gatherers are entangled in a complex web of social, economic and political relations with middlemen so that any effort to bypass the latter would also yield adverse effects. Interestingly, real prices paid to the extractors in northern Bolivia (US$0.19-0.48 per palm heart) are far higher than those paid to the gatherers of *Euterpe oleracea* Mart. in Brazil (US$0.04-0.07) (Pollak *et al.* 1995: 363)[417] or Guyana (US$0.06) (Van Andel and Reinders 1999: 49). Due to the higher density of *E. oleracea*, daily incomes of palm heart extractors vary less significantly: in northern Bolivia they amount typically to US$7-11, as compared to US$8-10 in Pará (Pollak *et al.* 1995: 363) and US$4.2 in Guyana (Sullivan 1998, cited in Van Andel *et al.* 1998: 15).

Trade margins realized in Brazil do reveal that excessive gains are made on the other side of the border, i.e. at the upper end of the trade chain. If changes were to be made to ensure a higher benefit capturing in Bolivia, in particular on the part of the extractors, the most realistic option appears to bypass one level of intermediaries in Brazil. As direct cash payment is crucial to both the canning factories and the Bolivian middlemen in view of their notorious shortage of liquidity, such a step is only feasible if other institutions take over the role of the evaded as providers of cash, advance payments or loans. This would require a non-profit agency capable to provide short-term credit, at least to the canneries, if not to the intermediaries in Bolivia. Even then it remained to be seen whether part of the resulting gains would finally trickle down to the *palmiteros*.

Expansion of the timber industry

Commercial extraction of timber in Bolivia has long been confined to the Departments of Santa Cruz, La Paz and Beni (López 1996: 23). In northern Bolivia, timber exports date back to the mid-20th century when wood from Riberalta arrived at La Paz by plane (Kernan 1951:

[416] It goes almost without saying that the least shares of the final sales price accrue invariably to those at the very beginning of a marketing chain. But this does not necessarily mean that their trade margins or net gains are lower than those from market participants further up the chain. NTFP 'worlds' should not be made by conjectures and value-laden assumptions but need to be based on a sound methodological underpinning and a stringent argumentation (cf. Chapter 1.3.2).

[417] In an earlier study, palm hearts from the Amazon estuary sold at US$0.08 (Anderson 1988: 151).

355).[418] Given the excessive transport costs, the volume exported was rather negligible. In the mid-1980s, the annual cut in northern Bolivia was hovering around 20,000 m³, the extraction of which provided employment to about 400 laborers (Salas 1987: 25-6). By 1992, annual production rose to 64,000 m³ of logs, or 37,007 m³ of sawnwood, with mahogany (*Swietenia macrophylla* King), tropical cedar (*Cedrela odorata* L.) and tropical 'oak' (*Amburana cearensis* A.C. Smith) accounting for 91% of the total cut (DHV 1993a: 18). This translated into an average annual cut of less than 0.01 m³ per ha when accounting for a total forest area of about 10 million ha. But logging activities were mainly confined to Iturralde and Vaca Diez Provinces rather than covering the whole region. The volume effectively cut in a given area was therefore much higher. Nevertheless, timber extraction is very selective, and the visual damage to the residual stand is lower than in comparable logged-over rainforests.

In the wake of the latest rubber crisis this situation is about to change. In search of alternative sources of income, many *barraca* owners turned to permit timber extraction on their estates. Logging is carried out by mobile work crews which are hired by sawmills that provide the machinery needed. All staff except tree-finders (*rumbeadores*) is recruited from town as skilled labor in the rural areas is extremely scarce. Likewise, the majority of the approximately 25 sawmills in the region is based in town.[419] By the late 1990s, timber production had risen to around 100,000 m³ per year,[420] providing jobs to some 3000 laborers.[421] Permanent employment hardly exceeded 1000 posts, with the remainder being made up by temporarily recruited logging personnel. Recently, Bolivia's timber industry has experienced a severe setback which can partly be associated with the increased costs for fulfilling the requirements of the new Forest Act. At the turn of the 21st century, timber production dropped sharply in the Southern Bolivian Amazon but lingered at constant levels in northern Bolivia.

Until the late 1990s, state control of forest resources was virtually absent from northern Bolivia, thereby stimulating illegal practices that turned log extraction and processing into a lucrative business. Under the former forest legislation, in effect until 1996, only four forest concessions had been approved in Pando (Beekma *et al.* 1996: 36) while in the Province of Vaca Diez there was none (DHV 1993a: 12). In the Province of Iturralde, though, several concessions had been granted to Riberalta-based sawmills. The largely illicit basis of Riberalta's timber industry notwithstanding, timber extraction has a long history in Vaca Diez. It was commonly practiced as 'one-time utilization' (*aprovechamiento único*), implying the payment of a nominal fee to private forest owners or, in case of state forests, to the Forest Development Center (CDF) (Beekma *et al.* 1996: 37). As most forest land, irrespective of its legal status, has either been occupied by *barracas* or independent communities, the timber industry effectively had to reimburse the occupants for log extraction. Both *barraca* owners and inhabitants of independent communities were compensated marginally for the logs they

[418] As to sawmill technology in northern Bolivia, not much seems to have changed since the days of Kernan's technical aid mission in 1950: "Bolivian sawmills are, with few exceptions, underpowered and overmanned for reasons that are easier to discover than to correct" (Kernan 1951: 354).

[419] Most of the logs are floated to Riberalta thanks to its strategic location just below the confluence of the Beni and Madre de Dios Rivers. Sawnwood, though, mainly leaves by the road to La Paz, unless transported by river from Guayaramerín upstream the Mamoré.

[420] In 1999, official timber extraction in Pando and Beni totaled around 84,000 m³ and 185,000 m³, respectively (Superintendencia Forestal 2000: 29). Since Beni's production predominantly originates from provinces other than Vaca Diez (see ibid.: 16), probably around 100,000 m³ were extracted in northern Bolivia.

[421] Employment estimation for northern Bolivia is derived from Bolivia's overall cut of around 1 million m³ that provides 30,000 jobs in the forest sector (CFB 2000d: 5).

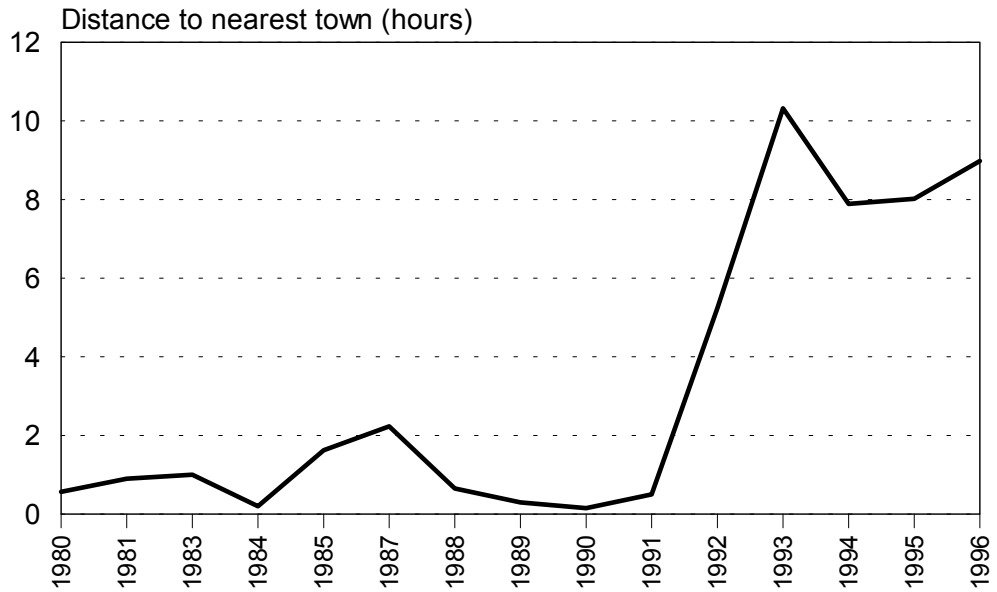
provided. Valuable species like mahogany and cedar sold at US$15-30 per stem, while other species yielded US$10 or less.[422] It should however be borne in mind that the logging companies have opened up forest tracts otherwise inaccessible to forest dwellers. The latter's majority considers road construction a positive spin-off of timber extraction.

In the widespread absence of official forest concessions, most logging operations in northern Bolivia had been illegal by the time of the new forest legislation. Promulgated in 1996, the new Forest Act annihilated even most of the existing concessions, providing the basis for a revised concession system. By 1997, 19 contract areas had been granted in Pando Department alone, covering 1.5 million ha or 25% of the land surface (Superintendencia Forestal 1997). The large area assigned to timber extraction underlines the government's endeavor to foster the use of the region's excessive timber resources. Being mainly located along the borders with Peru and Brazil (CPTI-CIDOB 1997), new timber concessions only marginally coincide with the zone from which Brazil nuts are being extracted. Overlapping exists, however, in case of the indigenous territory applied for by the *Yaminahua* and *Machineri* in the northwestern corner of Pando. It remains to be seen how disputes will be resolved that have arisen between the logging firms on the one hand, and the indigenous groups along with Brazil nut and palm heart extractors on the other.

Two types of enterprises are involved in timber processing. First, it is the well established Brazil nut (and former rubber) houses, such as Hecker, Vargas, and Bezerra, which are also involved in palm heart processing. Second, Santa Cruz-based enterprises have entered the region since the early 1990s as timber supplies in other parts of Bolivia are dwindling. They established sawmills on their *barracas* close to the source of raw material. They also invested in tree plantations but these tend to be so small in scale that the procurement of raw material relies wholly on wood from natural forests. Similar to the palm heart industry, a previous urban-based industry is expanding all over the region and new extraction sites are ever more distant from town (Figure 3-8).

[422] Given the comparatively low production costs, these nominal prices indicate that most of the profit accrues to the sawmills. In 1997, sawnwood of mahogany and cedar sold in Riberalta at US$400-450 per m³ and US$320-350 per m³, respectively; this compares to production costs, based on 1992 data, of around US$250 and US$190, respectively (DHV 1993a: 18). In many cases, one trunk of these species comfortably yields 1.7 m³, that is, the round wood equivalent to one cubic meter of sawnwood.

Figure 3-8 Mean travelling distance between new timber extraction sites and towns in the northern Bolivian Amazon, 1980-1996; based on a sample of rural settlements (n=163) throughout the region.



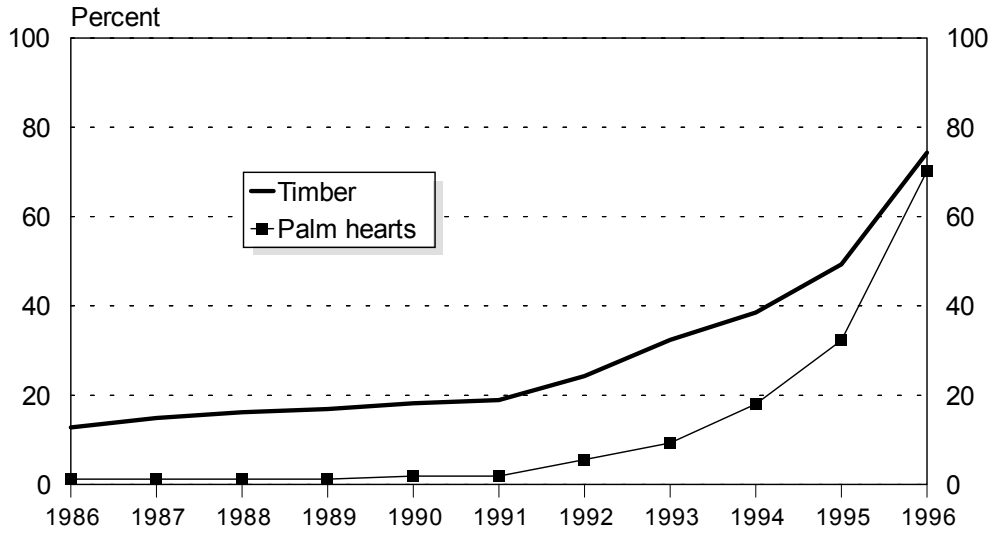
Source: Village Survey 1997.

Note: Mean travelling distance refers to the typical duration of road and/or river transport from the sites where extraction commenced in the respective year to the nearest town. In 1982 and 1986, no new sites came under extraction in the settlements sampled.

The timber industry's move into progressively more remote areas has been most pronounced after 1992 (Figure 3-8), i.e. concurrently with the last years of rubber production. That the expansion of timber extraction can be associated with the rubber decline is confirmed by a citation from the then directors of the former association of *barraca* owners[423]: "The majority of our association members, precisely because of the price drop of our products, turns towards timber extraction to be able to maintain their facilities" (Saucedo and Lazo 1996: 58; my trans.). The expansion of logging activities has been a concomitant of the diversification of the species extracted. In pristine forest, nowadays encountered only in the more remote pockets of the region, logging still focuses on mahogany (*Swietenia macrophylla*) and cedar (*Cedrela odorata*). In stands where large specimens of these species have already been cut, attention turns towards lesser-known and/or commercially less valuable species, such as tumi (*Amburana cearensis*), mara macho (*Cedrelinga catenaeformis* Ducke), aliso (*Alnus* spp., *Vochysia* spp.), cuta (*Astronium* spp.), itauba (*Mezilaurus itauba* Meissn.), masaranduba (*Manilkara* spp.) and tajibo (*Tabebuia* spp.). The advance of the timber and palm heart fronts is reflected in the increasing percentage of rural settlements affected by logging and palm heart extraction (Figure 3-9).

[423] This refers to the Association of Rubber and Brazil Nut Producers (ASPROGOAL).

Figure 3-9 Percentage of rural settlements in northern Bolivia (n=163) affected by the extraction of timber and palm hearts, 1986-1996.



Source: Village Survey 1997.

Note: Cumulative percentage of settlements ever affected by extraction.

By 1992, timber or palm heart extraction had commenced in less than a fifth of the 163 settlements surveyed. But along with the progressively lower income from rubber tapping, their share soared to about three quarters by 1996 (Figure 3-9). The need for compensative income from palm heart and timber extraction had become imperative in the majority of settlements.

Recently the national timber industry suffered a severe setback. Sawmill owners and timber exporters attribute the crisis to inappropriate stipulations of the new Forest Act and insufficient incentives to the forest sector as a whole. The new law had effectively reduced the area intervened for timber extraction to a mere fourth of the former size. Investments to be borne by the industry in order to comply with the law's requirements – in the first place forest inventories and management plans – brought only delayed returns. The approval of management plans had often been postponed as conflicting claims between divergent interest groups were to be settled first. As a result, export earnings of the forest sector dropped from US$145 million in 1997, over US$120 million in 1998 to US$109 million in 1999 (CFB 2000b: 2). Deducting the share of NTFPs, timber exports dropped by 27% from around US$102 million in 1997 to US$73 million in 1999. The crisis has been most pronounced in the southern Bolivian Amazon where timber extraction has diminished with a substantial number of laborers being dismissed. The new Forest Act can be blamed for the changes only to a certain extent. In 1995, that is one year before the law came into force, forest product exports totaled US$105 million (CFB 2000c: 3). The recent decline thus also reflects the typical fluctuations of a dynamic market for forest products.

For the good and for the worse, the future in northern Bolivia roots clearly in timber. For example, the harvestable volume of Pando's forests has been estimated at 26.7 m^3/ha (Superintendencia Forestal 1999). If only 87% out of the 93% of the land forested were harvested, the potential total volume amounted to 117 million m^3; under a sustainable production scheme, about 4.7 million m^3 of roundwood could be harvested within the first 20

years and 3.5 million m³ of roundwood annually in subsequent felling cycles (Peralta *et al.* 2000: 14).[424]

Ephemeral gold rush

As early as 1827, the upper reaches of the Beni river and its tributaries were reported to represent a region in which "for the most part the rivers are navigable, with a gentle current in the deeper parts. On the shores of every one of them gold is to be found" (Herrara 1835: 100). Rumors "about the legendary treasures and the gold carrying streams forming the river Beni" (De Rivière 1892: 204) persisted by the end of the 19th century but the 'search for El Dorado' was postponed as 'black gold' became the lure for thousands with the upcoming rubber boom (see Sections 2.3 and 2.4). In the early 20th century, the country's Northeast including the upper reaches of the Madre de Dios, Purus and Acre Rivers, was seen as one of Bolivia's three principal gold regions (Von Vacano and Mattis 1906: 56). But it was not before the mid-1980s that it became to be exploited on a larger scale. As for other parts of the world, the gold rush in northern Bolivia was of ephemeral nature, lasting from about 1985 to 1993.[425] Brazilians were at the forefront of the rush, providing the bulk of investment in gold-washing equipment.[426] Next to them, Bolivian gold diggers (*garimperos*) encompassed local entrepreneurs, merchants and, to a lesser extent, small cooperatives that were relocated by the Bolivian Mining Corporation (Fernández and Pacheco 1990: 8). Riberalta's entrepreneurial class figured prominently among those who invested in *dragas*, i.e. barges with a conveyor belt and the equipment needed for filtering the gold dust or nuggets.[427]

The gold rush had a twofold linkage with the rubber crisis. First, tappers leaving the *barracas* because of the rubber decline found new employment with gold prospecting. Numerous large patrons had invested in the required equipment for which they were to recruit labor. Ironically, labor was readily available among the ex-rubber tappers. Consequently, these were hired by the same entrepreneurial class that previously had no longer been willing or capable to employ them. Second, some patrons were forced to terminate rubber production precisely because their laborers had been lured into the gold rush.[428] Initially, most of the gold diggers

[424] Considering sawmilling recovery rates of 60% and F.O.B. values of US$230/m³ for sawnwood, this log volume is worth over US$600 million at present market prices (ibid.).

[425] Similarly, from Madre de Dios in Peru (not to be confused with Pando's Province of Madre de Dios) it is reported that gold mining attracted a substantial amount of people in the early 1990s, diminishing the rural population's participation in other extraction activities (Domínguez 1994: 9).

[426] Gold exploitation turned into an activity devoid of control on the part of the state, the regional development corporations and the armed forces, thereby stimulating the intrusion of ever more firms from Brazil that brought in the required equipment (Fernández and Pacheco 1990: 8).

[427] Such a barge requires an investment of US$70,000, whereas a *balsa*, i.e. a small boat with a simple outboard motor, is available at US$8000 (Honorable Cámara de Diputados/República de Bolivia 1989: 140-1). In 1997, approximately 50 *dragas* and 400 *balsas* were still operating in northern Bolivia. Figures on the height of the rush around the end of the 1980s diverge largely: 50 *dragas* along with 280 *balsas* are reported for Northeast Bolivia (Honorable Cámara de Diputados/República de Bolivia 1989: 35), as opposed to 2000 *dragas* run by Brazilians alone (Ormachea and Fernández (1989: 15). The true number was probably somewhere in-between. The present-day owners include some of the Brazil nut and timber magnates like Vargas, Bezerra or Destre. Waldemar Bezerra, once senator under the military dictatorship of General Banzer (1971-78), also used to buy a good part of the gold trafficked in northern Bolivia.

[428] Clay (1994: 29) reports a similar situation from the Brazilian Amazon, where "the opportunity for extractors to earn money in activities such as prospecting for gold or hiring out their labor for urban and farm work has also brought about a decrease in gathering."

headed for the provinces of Federico Román and Abuná in search of a solution for their miserable situation (Ormachea and Fernández 1989: 14).

In the second half of the 1980s, an impressive number of males was desperate to make a fortune in the *garimpo*: among the 271 households surveyed in the rural and peri-urban areas, around 20% each reported to have been involved in gold prospecting, especially in the period 1987-1992 (Stoian, in prep.). The total number of 2000 men prospecting gold in northern Bolivia in the late 1980s (Honorable Cámara de Diputados/República de Bolivia 1989: 143) dropped to about 1500 by the mid-1990s. The gold rush hardly benefited the Bolivian state as most of the production left the country via illegal channels (Quiróz 1996: 39-40). Royalties of no more than US$21.656 were paid annually to the Departments of Beni and Pando (Honorable Cámara de Diputados/República de Bolivia 1989: 142). About 80% of the annual gold production of around 5000 kg, worth US$56 million, was illegally trafficked to Brazil so that a mere 20% remained in Bolivia (ibid.: 35). Nonetheless, income on the part of the *garimperos* was substantial, averaging Bs.4500 or US$1100-1200 per month.[429] Yet in the twinkle of an eye, the diggers had spent their quick gains on alcohol, exclusive food, drugs and prostitution, i.e. in secondary businesses typically associated with gold prospecting.[430]

Gold prospecting was initially confined to the eight months of the drier season as the low technology available required to work the gold-bearing river sediments during low water table. Alternatively, diving equipment was used, consisting of a primitive tube system that allowed the gold prospectors to exploit underwater sediments. This low-cost labor-intensive system provided employment to a considerable number of ex-rubber tappers. These in turn raised the demand for staples produced by the communities close to the prospecting areas. Further beneficiaries were river traders whose new clientele relied wholly on food imports, including a host of delicacies given the unprecedented purchasing power available. Along with the introduction of more sophisticated technology in the early 1990s, gold prospecting shifted to the Madre de Dios and the lower Beni River between Cachuela Esperanza and Villa Bella. Prosperous Brazilians and Bolivians began to invest in water-based excavators equipped with conveyor belts, tubes, and a washing system. These semi-automatic excavators require a crew of eight men, compared with six men needed on a *balsa* (Honorable Cámara de Diputados/República de Bolivia 1989: 141).

The labor system of gold prospecting resembled that of rubber in that well-off investors provided migrant laborers with the necessary infrastructure to extract natural products under precarious conditions. The prospect to turn rich over night kept spirits high despite the dangerous and strenuous work. While quite a few diggers lost their lives through collapsing river banks, malfunctioning air supply systems, or insidious murder, working crews typically recovered between 25 and 100 grams of gold a day.[431] In the 1980s, this translated into daily gross incomes of US$300-1200. Operating costs were high, too, as fuel, mercury and all basic necessities had to be imported to the remote prospecting sites. Fueled by at times exorbitant gains, gold diggers called for mini-aircrafts to be airlifted to the next town rather than

[429] These figures, derived from the rural and peri-urban household surveys, clearly exceed those of the Bolivian government estimating the monthly income of an average gold washer (*lavandero*) at US$396 (Honorable Cámara de Diputados/República de Bolivia 1989: 192).

[430] In this respect, too, gains were drained from Bolivia to Brazil as most of the foodstuffs and drinks were imported from there, and even the prostitutes were chiefly of Brazilian origin.

[431] A *draga* typically produced 100 gram of gold per day, i.e. 2.2 kg monthly or 17.6 kg annually given an operation period of eight months a year; in contrast, a *balsa* produced 25 gram per day, 550 gram per month, or 4.4 kg per year (Honorable Cámara de Diputados/República de Bolivia 1989: 192).

enduring a five-hour boat trip. Fortunate gold diggers reimbursed nearby communities for agricultural products with nuggets. This unequalled influx of money may explain in part why rubber tapping was terminated earlier along the Madre de Dios River, and why many river-based *campesinos* regard commercial agriculture as little lucrative given that crop prices are no longer inflated by gold diggers (Lazo, pers. comm.).

At the turn of the 21st century, the work of an experienced crew still yields about 20 grams worth US$220 a day. But the big rush is gone without having left much for the region; prospects to discover new deposits are bleak. Whatever remains to be exploited will be seized by well-equipped and specialized explorers often depending on foreign capital. A positive aspect of the decline is the reduction of mercury contamination which affected the rivers in the years of the rush (cf. Ormachea and Fernández 1989: 15). Nowadays, there is no evidence that fish stocks continue to suffer from high mercury levels (Guardia, pers. comm.).

Expansion of agriculture

The initial years of rubber exploitation had been characterized by a monopolized system of food supply controlled by the patrons. As early as in the 1920s, however, restrictions on agriculture relaxed when the first rubber crisis called for modifications of the *barraca* economy. The agrarian reform in 1953 paved the way for self-reliant food production both on the *barracas* and in independent communities. Nonetheless, food insecurity continued to be a major problem in northern Bolivia up to the early 1980s (Romanoff 1992: 122). A large part of agricultural products consumed in the region was of Brazilian origin (Ormachea and Fernández 1989: 32). The high dependence on these food imports decreased only after 1994. The Brazilian *real* had been linked to the US dollar and the resulting price hike rendered the imports less competitive. Even today, a good part of the fruits, vegetables and grains sold on the markets of Riberalta continues to originate from the foothills of the Bolivian Andes, the Brazilian state of Rondônia, if not the Peruvian Amazon, from where agricultural produce is imported the lengthy route via La Paz (Bakker 1999). More than half the rural households are not self-reliant in food throughout the year: the urgent need for cash in March and April, when rice and maize are harvested (see Annex 2), forces many of them to sell part of their produce to an itinerant trader or in the urban market. At the end of the year, when they run out of supplies, rural small producers have to buy rice at up to two times the price they received (Stoian, in prep.).[432]

Though ecological and economic constraints continue to impede agricultural development, the latest rubber crisis reinforced the transition from extractivism to peasant agriculture. Many independent communities underwent a process of diversification, with agriculture gaining importance in addition to the increase in Brazil nut gathering (Ormachea and Fernández 1989: 50).[433] In the early 1980s, the area cultivated in the Departments of Beni and Pando was estimated at 18,000 ha and 3000 ha, respectively (Torrico 1983: 14); by the early

[432] While manioc and plantains are staples, requiring little care and being harvestable throughout the year, rice is appreciated as the component that makes a meal rich; maize, in turn, serves mainly as feed of small livestock. During the first weeks of the harvest, prices paid for one arroba (11.5 kg) of rice drop from about Bs.12-15 to Bs.8-10 in view of the rapidly increasing supply in the market. As supplies diminish toward the end of the year, prices recuperate to the pre-harvest levels, precisely at the time when rural producers need to purchase rice themselves (Stoian, in prep.).

[433] Expansion of agriculture resulting from the cessation of rubber tariff protection is also reported from Brazil, where "rubber tappers are increasingly turning to farming to recover lost income" (Browder 1992a: 176).

1990s, the area had risen to around 33,000 ha and 15,000 ha, respectively (INE 1999d, e).[434] The process of agricultural expansion is even more remarkable in view of the rural exodus that affected both Pando and Vaca Diez (see Chapter 4).[435] The main reason for this expansion is the higher importance of agriculture in independent communities compared with the *barracas* (Table 3-7). A significant share of the erstwhile *barraca* population has left for an independent community in the wake of the rubber crisis, bringing about a shift from strongly extraction-based livelihood strategies to those rooting greatly in agriculture (Stoian, in prep.).

In contrast to the adjacent Brazilian states of Acre and Rondônia, conversion of tropical high forest to cattle pasture has been playing a minor role in northern Bolivia to date. This is due, *inter alia,* to the existence of extensive natural savannas in the Beni Department which nearly reach to Riberalta at their northern fringe. However, in the surroundings of Cobija and Guayaramerín and, to a lesser extent, along the principal roads near Riberalta, cattle ranches have been expanded (cf. Keizer 1993). They border on the area controlled by independent communities, which are characterized by small-scale production systems. Small livestock, such as pigs, chicken, and ducks, is encountered in almost all rural settlements. But the number of cattle, the length of fallow periods, and the average area cultivated are highly variable (Table 3-7).

Table 3-7 Selected agricultural features of rural settlements (n=163) surveyed in northern Bolivia, by settlement type.

	Cultivated land per household (mean in ha)	Duration of fallow period (mean in years)	Cattle per settlement (mean #)
<u>*Barracas*</u>			
Enterprise-run *barracas*	1.04	3.0	15.3
Large patron *barracas*	1.34	2.8	16.9
Small patron *barracas*	1.69	4.4	3.7
Barracas in transition	1.31	3.4	3.9
<u>Independent communities</u>			
Peri-urban communities	1.63	4.0	0
Agrarian communities	2.27	3.9	15.7
Agro-extractive communities	2.11	4.8	3.5
Extractive communities	1.97	4.2	60.0
Indigenous communities	1.44	3.5	4.6
Rural sub-centers	2.19	6.6	299.0

Source: Village Survey 1997.

Note: Hectarage refers to the land annually cleared per household.

[434] The concurrent expansion of cattle ranching (see below) can only to a limited extent be explained by the latest rubber crisis. In fact, many cattle ranchers have been involved in this business for more than twenty years and only few patrons turned to cattle raising after the collapse of rubber trade (Caballero and Eduardo 1996b: 49).

[435] From 1986 to 1993, for instance, arable land in the Province of Nicolás Suárez increased by 1940 ha or 17% (Keizer 1993: 40), though its rural population decreased by 31% from 1985 to 1992 (INE 1986, INE 1992b: 47).

Agriculture is less important on *barracas* than in independent communities, with an average household cultivating 1.4 and 2.0 ha/yr., respectively (Table 3-7).[436] These figures compare to the area cultivated annually in the Province of Madre de Dios (Pando Department). Its second and third section consist almost exclusively of *barracas*, with an average household cultivating 1.4 and 1.3 ha/yr., respectively (SNDR 1995b: 42, 1995c: 35). In contrast, the first section of this province revealed an average area of 1.8 ha per household (SNDR 1995a: 69). This section is located closest to the markets of Riberalta and comprises chiefly agrarian and agro-extractive communities. Both *barraca* residents and inhabitants of independent communities seek principally to meet subsistence needs. Wherever market access allows, the agricultural area is expanded and part of the production is geared to the market (see also Stoian, in prep.).

Among the *barracas*, small patron *barracas* reveal the highest hectarage under cultivation. Here, access to land is rather egalitarian as most of the residents belong to the same kinship or family. Secure land tenure encourages a more diversified production which is partly geared to the market. In contrast, large-scale *barracas* and *barracas* in transition are characterized by less agricultural area. The few permanent inhabitants of enterprise-run and large patron *barracas* lack the incentives to expand agriculture beyond subsistence production. Independent communities, on the other hand, show a relatively high area dedicated to agriculture, in particular when located close to an urban market. Peri-urban communities are an exceptional case in that land scarcity hampers the expansion of agriculture. Limited farmland is offset by better access to urban wage labor that provides off-farm income. Agrarian and agro-extractive communities, along with the rural sub-centers, reflect the highest area under agriculture. Here, land pressure is less pronounced than in peri-urban communities. In addition, most of these settlements are in the vicinity of markets, providing incentives for surplus production. Market accessibility decreases with the extractive communities and, consequently, bartering gains importance. The small area cultivated in indigenous communities manifests that their inhabitants primarily seek to meet subsistence needs.

Fallow periods are an important variable of land-use dynamics. In northern Bolivia, they usually do not exceed four to five years. The average duration, however, varies widely and is obviously not related to land scarcity. Fallow cycles seem to be more dependent on agricultural practices and soil fertility. Evidently there is a marked difference between fields in seasonally inundated areas (*bajío*) and those established on well-drained upland sites (*altura*).[437] Given the high risk of loosing a harvest on the floodplain, it is well founded that most of the fields (*chacos*) are established on the high levees. In light of poor chemical soil properties, however, the average duration of fallow periods is surprisingly low.[438]

[436] In a new field, rice is often sown between rows of maize which are three to five meters apart. After the harvest from February to April, old fields tend to be cultivated with manioc or plantain for one or two years to come.

[437] In Brazil, non-inundated upland sites are known as *terra firme*, as opposed to the seasonally flooded *várzea*.

[438] The rural household survey provided more insight on this issue: natural high forest (*monte alto*) converted through slash-and-burn is said to be more apt for the cultivation of rice; maize performs better when sown on soils previously under secondary forest (*barbecho*). Obviously, clearing high forest is more laborious than clearing secondary forest. The decision whether to make a field in high or in secondary forest depends on the availability of family labor, alternate income opportunities and, eventually, physical fitness. Sickness during July and August at the onset of the slash-and-burn cycle frequently compels forest dwellers to establish a new field on a *barbecho* irrespective of the length of the fallow period (Stoian, in prep.).

Cattle ranching is most important in enterprise-run or large patron *barracas*, extractive communities and rural sub-centers. As shown in Section 4.3.2, the rural sub-centers are characterized by powerful families with a dominant claim on the land in their surroundings. Many of them involve in cattle ranching, reflected in the highest average number of cattle among all settlement types. Similarly, extractive communities, in particular those located in the province of Nicolás Suárez, depict the significance of cattle. But it is often a few better-off inhabitants, if not urban-based landowners, who specialize on cattle ranching rather than a community as a whole. In general, the importance of cattle ranching in the influence sphere of Cobija outweighs that in the surroundings of Riberalta. As far as large-scale *barracas* are concerned, cattle raising aims mainly at ensuring the intra-*barraca* supply of meat, in particular during the Brazil nut harvest when demand for meat is highest.

In sum, the importance of market-oriented agriculture increases in independent communities situated close to the urban centers or roadsides, while subsistence agriculture prevails in more remote communities and on the *barracas*. The rising significance of commercial agriculture is reflected in the growing number of farmers regularly attending urban markets, as well as in the expansion of Riberalta's central market. New agricultural markets have emerged in rural sub-centers where farmers from the surroundings can offer their crops. In the virtual absence of farming inputs, such as pesticides or fertilizer, the region's agriculture is characterized by rather basic technologies. Entire harvests are lost due to adverse weather and, though to a lesser extent, various kinds of pests.[439] But unlike former years when virtually the whole rural population was dependent on the food supplies from the patrons, agriculture nowadays provides a stable subsistence basis, if not an important source of household income (Stoian, in prep.).

Synthesis: dynamics in forest product extraction revisited

The post-rubber era in the northern Bolivian Amazon has been characterized by (1) pronounced migratory movements, (2) the socio-economic differentiation of rural settlements through the adjustment of trade-offs between agriculture, extractivism, and wage labor,[440] and (3) increased extraction and processing of Brazil nuts, palm hearts, and timber. At a first glimpse, the latest rubber crisis has been overcome without major turbulence. The experience of two rubber crises earlier this century contributed to cope with the third and presumably irreversible rubber crisis. Phenomena like out-migration from the former rubber estates, foundation of independent communities on abandoned estates, expansion of agriculture, and the turn towards alternate forest products are adaptive responses well-known from earlier crises. New, however, was the magnitude of migratory flows and the change of value generated from forest products, in particular NTFPs.

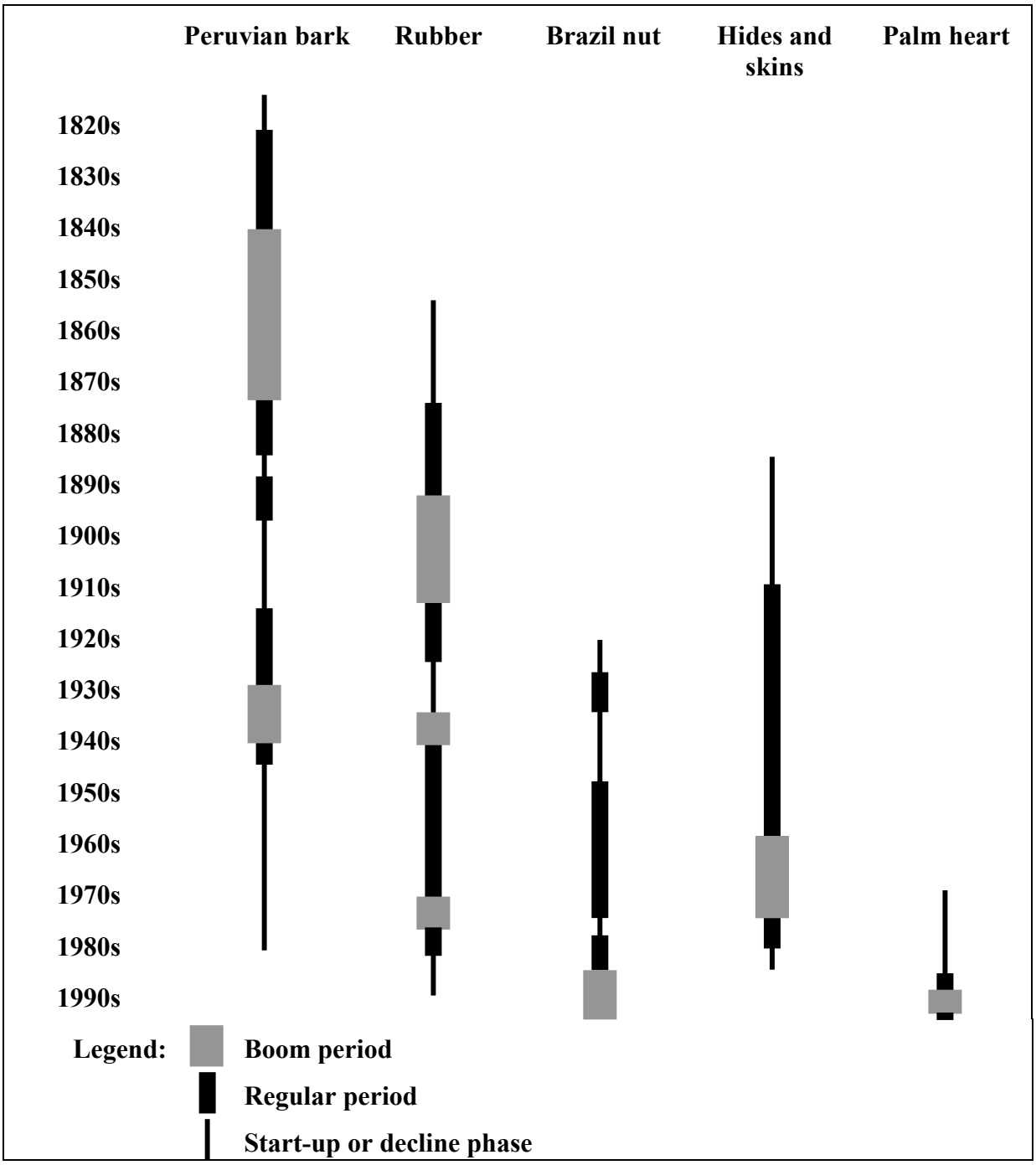
Recent shifts in forest product extraction are neither unique to northern Bolivia nor to other parts of the Amazon. In accordance with boom and bust cycles of the major NTFPs, shifts in northern Bolivia were often performed by the same firms or their successors.[441] The

[439] Pests range from mammals – wild boar, for example, severely damages maize and manioc plantations – to a host of insects often subsumed under the generic name *petilla*.
[440] For the details, see Chapter 4 and Stoian (in prep.).
[441] A prominent case is that of the House of *Braillard & Cía.*: Initially based on the exclusive exploitation of rubber, the succeeding *Seiler & Cía.* began to trade in Brazil nut in the aftermath of the great rubber boom. Taken over by *Federico Hecker* in the 1970s, the firm continued to rely on rubber and Brazil nut. Since the

persistence of entrepreneurs involved in NTFP trade despite its volatile markets has also been observed in Peru. In the late 19th century, for example, the upcoming rubber boom encouraged entrepreneurs engaged in the then lucrative trade in Panama hats to shift to the rubber sector. Julio César Arana – known to us through the Putumayo atrocities dealt with in Sections 1.3.2.1 and 2.4 – figured prominently among those who made this shift (Pennano 1981: 10). His counterpart in northern Bolivia, Nicolás Suárez, represents the continuity of an NTFP mogul who became first involved in *quina* trade, then shifted to rubber, and finally traded in Brazil nut too. The Suárez era covers about seven decades of northern Bolivia's almost two hundred year history of commercial NTFP exploitation which is summarized in Figure 3-1.

1980s, it has been run by his sons under the name of *Hecker Hermanos*, who diversified the business into timber, gold and, later on, palm heart production.

Figure 3-10 Dynamics in extractive economies of northern Bolivia, 1820-2000.



Source: Adapted from Stoian (1999).

Note: Phases reflect the relative rather than the absolute weight of a given product. Continuation of trade in Peruvian bark in the 20th century also involves areas adjacent to northern Bolivia.

The economic history of the northern Bolivian Amazon basically confirms Homma's model of the historical cycle of NTFP extraction in Amazonia (1992: 25). Beginning in the early 19th century, commercial extraction of forest products first focussed on Peruvian bark, then shifted to rubber – for the most time accompanied by the exploitation of hides and skins – before it

turned to Brazil nut and, most recently, palm heart (Figure 3-10).[442] Homma's model predicts that the final phase of extraction of a given product is brought about by its exhaustion, when supply becomes inelastic, or when natural or synthetic substitutes are discovered (1992: 25). Notwithstanding the overexploitation of certain NTFPs – e.g., caucho, several animal species, and probably palm heart – their trade in northern Bolivia did not decline as the resource base was depleted or supply had become inelastic. Instead, it was synthetic substitutes coupled with plantation production that knocked the bottom out of the markets for wild *quina* and native rubber. A special case not predicted by Homma's model is the collapse of the trade in hides and skins of forest animals. Though certainly subject to overexploitation, the pelt trade came to a standstill because of a legal ban rather than vastly diminished supply. Yet it was not the immediate enforcement of the respective laws and regulations but shrinking international demand resulting from successful campaigning of environmental NGOs that ultimately lead to the collapse.

Reality is more complex than Homma's model suggests, as also reflected in the ups and downs of the palm heart industry. As early as the 1960s, there was an attempt to establish a canning industry in northern Bolivia.[443] After only one or two years of operation the factories had to close down as both the supply with receptacles and the transport of the canned produce failed owing to deficient communications (Stoian and Hofmann, in prep.). In the 1990s, the second attempt to set up a palm heart industry met with such a success that the ever increasing raw material inputs raised doubts on its ecological sustainability (Peña 1996, Hofmann 1997, PROMAB 1998). But before facts from the field could prove the pessimistic forecasts correct, and before a proposed plantation program could be launched that would have confirmed the prediction of Homma's model, market distortions in Brazil, the main purchaser, thwarted the industry's economic prospects. It might well be the case that the partial closure of the market 'window' for palm hearts from northern Bolivia allows the resource base to recover so that upon its reopening sufficient supplies will be available. Obviously, the economic, ecological and social realities of forest product industries and the related cycles are more complex than a straightforward neoclassical model is able to predict.

Another restriction of Homma's model lies in its focus on the cycles of *individual* forest products. As valid it may be to foresee related trends, as inappropriate it is to predict general tendencies of extraction-based livelihood systems. Evidence from northern Bolivia underpins that such cycles hardly ever occur simultaneously (Figure 3-10). Rather, the contraction of the market for a given forest product is offset by the concurrent expansion of another product's market. It is precisely the discrete occurrence of expansion, stabilization, and decline phases that makes extraction-based livelihoods viable. This is best exemplified by the decline of Bolivian rubber trade. According to the pessimistic view of 'evolutionists' like Homma (see Section 1.1.2), the rubber collapse could have resulted in the demise of extractivism given that rubber production had been the region's economic, if not cultural, backbone for more than a century.[444] Instead, extractivism flourishes more than ever in the northern Bolivian Amazon.

Resiliency of extraction-based livelihoods largely rests in the rural population's capability to adjust to the opportunities and restrictions imposed by the market economy. Another factor

[442] The figure conceals, however, that even the boom years in a given extractive economy witnessed a succession of waves rather than an uninterrupted progression (cf. Melby 1942: 457).
[443] One cannery was operating in northern Bolivia, viz. in Rosario del Yata situated 60 km east of Riberalta (Hofmann 1997: 31) and another was opened in the late 1970s (Carvalho 1980: 68).
[444] In the Brazilian Amazon, the regional economy collapsed as rubber prices plummeted during the bust that succeeded the great rubber boom (Barham *et al.* 1998: 435).

supporting extractivism is the high resource diversity encountered in tropical forests.[445] Though various authors point rightly to the fact that high species diversity results in low individual abundance and hence in relatively low NTFP productivity per unit of area (e.g., Anderson and Ioris 1992a: 338, Peters 1996: 23, Boot 1997: 440), it is precisely the high species mix that implies flexible responses to market 'windows' that may suddenly open. Weinstein (1983: 12) gives an example for such a strategy studied in the Brazilian Amazon: "... if a particular commodity was not fetching sufficiently high prices in the overseas market, or had been exhausted by previous expeditions, there was always other spices, oils, nuts, and woods that the gatherers could exploit instead." Similar flexibility with respect to divergent forest products has been reported from Peruvian Amazonia (Padoch 1987, Padoch and De Jong 1990, Coomes 1995), or the basin as a whole (Nepstad *et al.* 1992). Consequently, Homma's (1992, 1994) view of extractivism can safely be interpreted as overly pessimistic.

A contrasting view to Homma's model is further provided by Anderson and Ioris (1992a: 366) who base their criticism on empirical evidence from Combu Island in the Amazon estuary: "This situation [the lack of research and extension related to extractive resources] stems from a common perception among regional development agencies that forest extraction, as well as the populations who practice it, are technologically backward and destined to disappear. ... Rather than a static phenomenon, forest extraction enables rural inhabitants to adapt more effectively to the dynamic demands of the market. Allied with appropriate management practices, it generates high economic returns and, at the same time, promotes the maintenance of a wide range of natural resources. And the combination of these factors supports a population that, by Amazonian standards, is not only stable but extraordinarily dense." Arguing on a similar line, Torres and Martine (1991) advocate what they call 'poly-extractivism', that is a diversification of extractive activities into several products that, even when producing only small quantities of each product, can counteract the general trend toward concentration and domestication: "In this model, each differentiated market would not present enough bulk to justify the product's domestication but the sum of the products would be sufficient to guarantee a decent income for the producer" (Torres and Martine 1991: 24).

Though appealing in theory, the practice of 'poly-extractivism' looks different. At least in northern Bolivia, the extractive economy has historically relied on only one or two principal products, notwithstanding the concurrent extraction of a host of other NTFPs for subsistence use or small-scale commerce. The pronounced dependence on a very limited number of income-generating commodities seems precarious. Yet the recent decline in Bolivia's rubber economy did not lead to a pervasive economic recession. On the contrary, latest export data from the northern Bolivian Amazon are impressive. In 1997, official statistics recorded an overall NTFP export value of little less than US$38 million, with Brazil nuts and palm hearts contributing US$30.8 million and US$7.1 million, respectively (CNF 1999). In 1980, at a time when Bolivian rubber trade flourished, the official export values of rubber and Brazil nuts combined amounted to US$7.5 million and, allowing for contraband, probably did not

[445] This view is supported by Lescure *et al.* (1994: 60) who argue that "this resource diversity may be one of the main advantages of extractivism in that it permits great flexibility of exploitation in the context of environmental changes, as long as relevant markets exist or can be stimulated." The fact that save for oligarchic forests (cf. Peters *et al.* 1989b, Peters 1992) most NTFP occur with low abundance can be viewed from two different angles. On the one hand it increases the costs of extraction. On the other hand, it favors the latter's ecological soundness, as extractive activities "are sparsely distributed over a huge area and therefore have low impact" (Lescure *et al.* 1994: 60). The authors, though, stress that this general statement needs to be moderated by a more accurate analysis of the impact of extractive activities on different levels – the individual, the plant population, and the natural environment (ibid.: 61).

exceed US$11 million. Moreover, annual timber exports rose from US$1.2 million in the mid-1980s (Salas 1987: 25) to about US$20 million by 1997. Exports of forest products from northern Bolivia thus totaled little less than US$60 million in 1997. Adjusting for inflation, this is about double the value of the most lucrative years prior to the latest rubber crisis.

In the first place, it is the thriving Brazil nut industry that sets the pace in the regional economy. Unprecedented export earnings had repercussions on other branches of the economy and, to a notable extent, trickled down to the collectors. The shelling industry reinvested part of the capital accruing from the Brazil nut boom in timber, palm heart or gold exploitation, if not agribusiness. While in the late 1980s and early 1990s some of the increasingly horizontally integrated enterprises purchased *barracas* from large patrons to get hold of the resource base, they nowadays strive for obtaining forest concessions under the new forest legislation. In this process, old-established local firms fall behind the Santa Cruz-based enterprises which are characterized by an intrinsic system of economic relations inside and outside the country. This is the underlying reason why only a relatively small fraction of the earnings derived from Brazil nut exports circulates within northern Bolivia. The major part of capital is transferred to urban centers outside the region, namely Santa Cruz and La Paz, if not abroad.

Within the region, Riberalta, Cobija and Guayaramerín are upgraded in their function as political-administrative and economic-demographic *nuclei* (cf. Pacheco 1992: 160). It is here where the shelling industry is based. The rural areas serve primarily as a source of raw material and labor. Over the past five years, though, raw material prices have more than doubled. In 1998, Brazil nut collectors in *barracas* and independent communities respectively received US$4.5 and 7.5 per box as compared to US$2.2 and 3.1 five years before. Out of a total of US$10 million spent for the procurement of raw material, the collectors' share was about US$6 million, equivalent to 21% of the export earnings accruing from the Bolivian trade in Brazil nut.[446] Patrons and intermediaries gained US$1.8 and 2.2 millions or 6.3 and 7.7%, respectively. Taking into account that many patrons, intermediaries and nearly half the collectors predominantly reside in town, an estimated US$3.5 million from raw material sales, or 12% of the Brazil export earnings, remained in the rural areas.

The situation in the palm heart and timber industries is similar to that of the Brazil nut industry in that the major part of benefits is retained in the urban centers from where most of the profit is transferred outside the region.[447] But unlike the Brazil nut industry, these industries are dispersed throughout the region and offer employment opportunities in rural areas. Nonetheless, they recruit a substantial number of laborers from town due to the lack of skilled labor in rural areas. Even semi-skilled and unskilled labor is difficult to secure as the local labor force is said to be too unreliable to be employed on a permanent basis. Those who are recruited from town stay at least for a season given that there is little incentive to suspend work in places where most of them live without their families. These laborers mainly comprise recent rural-urban migrants who otherwise are largely deprived of urban employment opportunities given their lack of formal education (see Section 6.4). Participation in the extraction and processing of forest products is a prerequisite for their families'

[446] Figures presented in this paragraph refer to the shares of the Brazil nut trade within Bolivia though, as mentioned above, in 1997 some 20% of the raw material was purchased from Brazil. Since the cross-border flow of crude nuts is mainly clandestine, the benefits accruing to Brazilian collectors and intermediaries from raw material sales could not exactly be determined.

[447] For example, among the eight largest canning factories three are in Brazilian ownership (Hofmann 1997: 28).

economic survival in town. Analysis of benefit sharing in the forest-based industries has therefore to allow for both urban-based and rural collectors, if the share of the allegedly most disadvantaged group of the marketing chain is to be determined.

As for the palm heart industry, the purchase of raw material accounted for some US$2.8 million in 1997 (Stoian and Hofmann, in prep.), some 75% of which were paid to the extractors while the remainder was pocketed by patrons and intermediaries. In other words, about US$2.1 million, equivalent to 26% of the total value of palm heart exports from northern Bolivia, accrued to those at the very beginning of the marketing chain. The shares of rural and urban collectors were US$1.5 million and US$0.6 million, or 18% and 7%, respectively. Employees from rural areas gained about US$300,000 in 1997 (cf. Hofmann 1997: 55-63). Direct benefits from the palm heart industry accruing to the rural areas thus totaled US$1.8 million, or 21% of the total export value.

Comparable figures on the timber industry are scarce. But the distribution of benefits appears to be even more skewed towards the urban areas. In 1997, an estimated US$2.5 million, or 13% of export value, were paid to those providing logs from *barracas* and independent communities. The sawmills are located in both urban and rural areas but they rely heavily on laborers recruited from town. Rural income from wood processing is estimated at around US$300,000 per year. Notwithstanding the need for more accurate data, it is concluded that northern Bolivia's Brazil nut, palm heart and timber industries combined generate rural income of about US$8 million per year, equivalent to 14% of the total export value of forest products. This amount compares to the sparse funds governmental institutions provide to the rural areas. In 1997, US$1.2 million were made available through Popular Participation, FIS (*Fondo de Inversión Social*) invested US$0.5 million for schooling and health facilities, and US$1.5 million of forest royalties were transferred to the departmental governments and municipalities (PNUD 1998a: 216, Superintendencia Forestal 1998: 29). Taking further into account the high involvement of urban-based extractors and laborers, these industries prove to be indispensable sources of income for the poorer sections of society throughout the region.

From the perspective of rural households, the year-round agro-extractive cycle that combined subsistence agriculture with rubber tapping and Brazil nut collection altered notably and the respective income shares changed accordingly. In 1979, for instance, the mean extraction-based income of rural households was around US$900, with rubber and Brazil nuts accounting for US$500-600 and US$350-400, respectively. In 1998, Brazil nuts and palm hearts combined yielded a mean income of around US$800, with contributions of US$500-650 and US$150-300, respectively (Stoian, in prep.).[448] When allowing for the income from timber extraction, today's forest-based income is virtually of the same magnitude as about 20 years ago.[449] Rubber tapping as main dry-season activity has largely been replaced by the

[448] Average values, though, conceal the great deal of variation among different types of collectors. In some independent communities, in particular those close to an urban center, conversion of natural high forest to arable and pasture reduced the number of Brazil nuts trees so effectively that the average income from the Brazil nut harvest does not exceed US$150 per parcel. In contrast, households in extractive communities each may derive up to US$2,500 from the sale of Brazil nuts from their parcels. High variability of extractive incomes is also typical for the Pacaya-Samiria National Reserve of Peru "where the mean annual incomes from extractive products were in the order of $300-400 per year" but "the variation across households was generally between $0 and $1500 per year, reflecting quite distinct levels of extractive activity and reliance across households" (Coomes and Barham 1997: 185).

[449] As monetary transactions of rural households are effected in local currency, diachronic comparisons do not need to account for inflation when done in US dollars. Exchange rate adjustments of Bolivian currency against the US dollar well reflected domestic inflation over the past two decades.

extraction of palm heart and, to varying degrees, timber. For the time being, palm heart- and timber-based income along with increased earnings from Brazil nut gathering offset the income shortfall associated with the latest rubber crisis. Moreover, market-oriented agriculture has been expanded in all but the remotest settlements. Without doubt the adjustment of rural livelihood strategies has been successful in economic terms. But do they meet other criteria of sustainable development the same way?

The issue of social acceptance of extraction-based livelihood systems is difficult to tackle. Doubtlessly sheer economic needs largely determine the level of acceptance. What may appear socially unacceptable from an outsider's point of view may well be accepted by local people in the light of lacking alternatives. In the view of ex-rubber tappers one of the few alternatives has been migration to town. Living in the marginal neighborhoods of peri-urban areas, many of them maintain their linkages to the rural areas and derive a substantial part of their income from forest products (see Section 5.4.1). Others whose expectations had not been met in town have returned to a peasant living in one of the independent communities (Stoian, in prep.). Both peri-urban and rural livelihoods thus continue to depend on the gathering and processing of NTFPs even more than 150 years after the advent of their commercial exploitation.

Through time, products, markets, and politics have changed. Peruvian bark, rubber, Brazil nuts, palm hearts, and timber were the principal forest products in northern Bolivia during the 20th century. Other NTFPs supplemented forest-based incomes, e.g. wild cacao during the 1970s, or hides and skins of forest animals. Their trade peaked in the early 1970s before the violation of conventions on biodiversity conservation became so apparent that the government banned their illicit trade in 1986.[450] Extraction of further forest products also failed to be ecologically sound, with asaí and mahogany being the most prominent examples (Beekma *et al.* 1996: 35-7, PROMAB 1998: 2).[451] But no matter whether certain forest products were overexploited or lost their importance because of decreased international demand, the adaptive capability of the region's population ensured that a rural living can still be secured from a combination of agriculture and extractivism. Shifts in forest product extraction can therefore be viewed as key element of rural livelihood systems that, after all, show a high degree of persistence, if not sustainability.

Trade in forest and fallow products in other parts of the Amazon basin underwent similar shifts in products and markets (see Padoch 1987, Coomes 1995). The adjoining Peruvian Amazon, in particular, has a land-use history akin to that of northern Bolivia: in the 1910s, rubber exports from Peru declined rapidly and exporters shifted to products like cotton, animal skins, timber, and various non-timber forest products to fill the anticipated trade gap. Since rubber tapping ceased to be economically viable after World War II, residents have had

[450] The total prohibition of commercial hunting (*veda total*) had limited impact, for illicit trade persisted by the 1990s (Fernández and Pacheco 1990: 8-9). In addition, the black caiman (*Melanosuchus niger*) and the londra (*Pteronura brasiliensis*) have not yet been able to recover their populations that have been decimated as a result of intense commercial hunting since the 1950s and 1960s; in some areas, however, the caiman population has recovered considerably after the passage of the hunting ban (Hanagarth and Szwagrzak 1998: 305-8). Recently, the government made increasing efforts to enforce the pertinent *Decree N° 24774*. In 1998, for instance, the Viceministry of Sustainable Development obliged the Prefecture of Beni to burn nearly 23,000 illicitly trafficked skins of caimans and other reptiles worth US$600,000 (Anonymus 1998).

[451] The ecological soundness of rubber tapping was never really questioned despite indications of careless and haphazard tapping in parts of northern Bolivia (Paardekooper 1978: 26f). There are also hints that intense Brazil nut harvest adversely affects the regeneration of *Bertholletia* populations (Nepstad et al. 1992: 5), but the long-term effect of large-scale harvesting is yet to be determined.

to rely over the past forty years on a variety of alternate extractive and agricultural products. Not only were sugarcane, citrus fruits, watermelon, and avocado increasingly cultivated, but slack markets for NTFPs also gave an impetus for raising cattle, chickens, pigs and even tortoises (Coomes 1995).

Road construction in Peru stimulated such shifts in agriculture and forest product extraction, with her Amazonian lowlands becoming integrated into the national market about four decades earlier than those in northern Bolivia.[452] This partly explains why market-oriented agriculture is more advanced in the Peruvian Amazon. Another reason lies in the stronger involvement of Peruvian governmental and non-governmental organizations providing technical assistance and extension services to the rural population. In the 1970s, the upcoming booms of petroleum and coca (*Erythroxylum coca*) promised new business even beyond the realm of traditional forest and agricultural products (Coomes 1995: 114). At the same time, northern Bolivia continued to rely on rubber tapping and Brazil nut gathering, as the lack of infrastructure and capital impeded a more thorough diversification of the regional economy.

Nowadays, new products have been brought to the regions and now form part of the forest (e.g. certain palms and native fruit trees) or agricultural landscape (avocado, urucú, cupuazú, pineapple, citrus fruits, and yams). "The experience of forest use has not been simply the removal of individual species from the virgin rain forest during extractive booms, as popular accounts may suggest, but rather a process of continual, often subtle but purposeful transformation of the forest landscape ... The modified forest also provides a revised set of resources that condition future livelihood prospects for residents, some for better and some for worse" (Coomes 1995: 115-6). Without doubt, there is a recent trend in northern Bolivia to foreclose future opportunities for current residents by depleting forest resources such as asaí and some valuable timber species. But timber resources in Pando, Iturralde and Vaca Diez are excessive and may well last for several decades even if not too carefully managed. In contrast, the palm heart industry is likely to run out of raw material within less than ten years, unless plantations are established on a large scale (Hofmann 1997: 96).[453] Efforts to secure future supplies of raw material by cultivating *Bactris gasipaes*, as suggested by PROMAB (1998), are worthwhile. But even if they were successful on a large scale, incomes generated from palm heart extraction will not be as evenly distributed throughout the region as they are today (Stoian, in prep.). Plantations are likely to be established close to the processing plants, as high requirements for capital, know how, and labor impede decentralized small-scale solutions. Many rural and urban households now involved in palm heart extraction will thus be compelled to search again for alternate sources of income.

Apart from the non-sustainable fashion to which the extraction of certain forest products is subject to, other menaces cast a shadow on the future of the extractive economy in its present structure. After the year-long dependence on rubber as the principal export commodity, the region now is highly contingent on Brazil nuts for export earnings. In the long run Brazil nuts are likely to suffer the same fate as rubber, as the general dynamics of Amazonian extractivism suggest (see Homma 1992: 25).[454] On the other hand, Amazonian experiences

[452] The La Paz-Riberalta highway was only completed by the late 1980s.

[453] In addition to market forces, the viability of the *Euterpe*-based canning industry in northern Bolivia depends entirely on the rate of natural regeneration, with management practices unchanged. Given the scarcity of related inventory and growth data, a long-term prognosis of the industry's viability is of rather speculative character [for a detailed discussion, see Stoian and Hofmann (in prep.)].

[454] Being luxurious nuts, Brazil nuts can easily be substituted on the world market. By 1998, their share in the total volume of the international nut market had dropped to 0.7% (cf. Man-Producten 1998). Trade in Brazil nuts

from Peru, Bolivia, and Brazil during more than a century of rain forest use substantiate the hope that new wealth will come to the residents of NTFP extraction areas through consistent innovation, experimentation and penetration into the market economy (Nepstad *et al.* 1992: 12). Padoch and De Jong (1990: 157) argue on a similar line: "The *ribereño* populations of the lowland Amazon continue to be extremely flexible and mobile groups. The expectation of another 'boom,' of another forest product that will lift the region from economic doldrums, persists."

Forest product extraction has traditionally been the monetary basis of rural livelihoods, but the latter are not viable without a mainstay in agriculture. Unfortunately, agricultural development in most rural settlements is still in its infancy. With many forest dwellers being extractivists rather than agriculturists, agricultural systems lack the sophistication and diversity of swidden fallow agroforestry as practiced in other parts of the Amazon or Southeast Asia (e.g. Anderson *et al.* 1985; Padoch *et al.* 1985, 1988, 1998; Gholz 1987; Subler and Uhl 1990; Barton 1994; De Jong 1995; Coomes and Burt 1997). Nonetheless, agriculture needs to be the backbone of rural livelihoods given the vagaries of international forest product markets (Stoian, in prep.). Extraction-based incomes will remain to be essential as long as the promotion of more diversified agroforestry systems fails to yield significant results.

If the efforts to market new forest and fallow products were to fail, alternative and, most likely, more destructive land-use systems would emerge in the region. The NTFP-based industry would center more than ever on logging, cattle ranching and, albeit south of the region, agribusiness with soybeans, cotton, and sugarcane. From the forest dweller's perspective, the lack of capital and know how leaves little options beside the expansion of agriculture, predatory use of timber, or migration to urban areas in search of wage labor. Against this backdrop it is important to note that many students, both in urban and rural areas, nowadays attend secondary education. Their parents may still have bonds with the forest and, hence, participate in extractive activities, or bear the harsh working conditions in the Brazil nut and timber industries. Their modes of making a living are often determined by lacking choices given their low levels of formal education (see Chapter 5.3.1). But the higher-educated young in the towns and rural sub-centers are likely to strive for better jobs and living conditions than available to their parents. These young are especially eager to seek out opportunities other than forest product extraction, particularly in urban centers (see Smith *et al.* 1995: 81). By itself, however, education cannot solve the economic development problems of northern Bolivia (Romanoff 1992: 130). From a present perspective, it must be doubted that the occupational structure can effectively utilize literacy and higher formal education from the thousands of students who will search for employment in the near future.

Another factor hampering progress towards more sustainable use of the region's natural and human resources is the residential instability of its population. On the one hand, the readiness to move to other areas in search of new economic opportunities is a crucial factor for the

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may also be hampered by the contamination with aflatoxins originating from a fungus (*Aspergilus niger*). This threat is more immanent in years of prolonged inundations, as happened in northern Bolivia in early 1997. The floods impeded a timely transport of in-shell nuts to the processing plants. A major part of the harvest thus lingered in the extraction areas for several months despite the adverse conditions of high humidity. In addition, efforts to cultivate *Bertholletia excelsa* in plantations seem to yield first positive results. Although the tree's complicated pollination biology poses notable technical problems which presently impede its large-scale cultivation, intense research is underway in Brazil. It seems only a matter of time until plantation technology will be available.

security of livelihood systems. On the other hand, NGO-driven efforts to promote enrichment planting with forest and fallow species will yield poor results as long as rural inhabitants hardly stay more than five to ten years in a given place (Stoian, in prep.). A further difficulty poses in the increasing number of landowners who shifted their residency to urban areas (see Section 6.2). This phenomenon is not unique to northern Bolivia, as "rural land in Amazonia is rapidly shifting into urban resident ownership. The growing 'urbanization' of rain forest property rights suggests that rural extension must shift its scope to urban populations as well" (Browder 1992b: 39). If, however, at least part of the rural-urban migratory flow was to be arrested, rural infrastructure needs to be developed, in particular in rural sub-centers. In the urban centers, better employment opportunities need to be offered both in the formal and informal sectors. Otherwise the younger generation is bound to migrate to urban areas elsewhere in Bolivia rather than reestablishing themselves in the forest to make a living from agriculture and extractivism.

4

THE MULTIFUNCTIONAL CHARACTER OF RURAL SPACE: SETTLEMENT DIFFERENTIATION, FRONTIER EXPANSION AND URBANIZATION

Modern history is the urbanization of the countryside, not, as among the ancients the ruralization of the city.

Karl Marx
Pre-capitalist Economic Formations, 1964

This chapter draws in part on the article "Between extractivism and peasant agriculture: Differentiation of rural settlements in the Bolivian Amazon" (Stoian and Henkemans 2000).[455] For the purpose of the thesis, it has been substantially rewritten and supplemented with the aspect of frontier urbanization (Section 4.5).

Analytical framework and research questions

The Amazon is widely perceived as a rural region due to its sheer size and difficulties in access, the lack of information, the rapidity of the occupation process, and the non-systematization of valuable partial studies (Becker 1995: 53). This perception denies that the expansion of the frontier into the Amazon is an eminently urban phenomenon, as Amazonian urban centers absorb more immigrants than do the rural areas (Browder and Godfrey 1997), or how Becker (1995: 54) puts it, "whereas rural population growth is localized, urban growth is generalized." Both types of population growth deserve more detailed investigation, not only because they are related to each other, but because of their importance for regional development perspectives. In the context of 'contributions of non-timber forest products to socio-economic development' it is particularly interesting to elucidate what impact related processes have on NTFP extraction and the various stakeholders involved.

We have seen in the introductory chapter (Section 1.1.4) that spatial aspects have largely been neglected in NTFP studies to date. Temporal *and* spatial variations have hardly ever been addressed in a single study relating to forest product extraction. This is even more critical in view of the heterogeneity of the Amazon basin and the variety of resource use situations emanating from it. For regional development as a whole, spatial analysis is an indispensable tool which has suffered from the following deficiencies in the past (Rondinelli 1980: 5):

the failure to recognize the importance of spatial factors in national and regional resource development

the lack of an operational framework for regional spatial analysis, and

[455] Coauthorship of the article acknowledges Ariènne Henkemans' contributions to the Village Survey 1997 and the ensuing discussion of the major findings. Data analysis and writing up the article was carried out by myself.

the paucity and unreliability of data in rural regions for formulating effective development plans.

This chapter seeks to address part of these deficiencies by highlighting the paramount importance of spatial factors with respect to the location of specific settlement types, resource endowment and access to these resources, labor organization, market integration, and associated demographic patterns. A settlement typology will be presented that seeks to integrate the variety of these variables. It goes beyond the simple distinction between the estate and the independent producer sector that served our purposes in Chapters 2 and 3. By differentiating divergent growth poles within the *barraca* and the *campesino* sector,[456] which relate to rural-urban and rural-rural migration, it will be possible to elucidate long-term trends of consolidation and decline both between and within these sectors. Since the related processes are not confined to the rural areas, special emphasis will be put on frontier urbanization whose theoretical underpinning will be outlined below.

The 1960s and 1970s experienced an unprecedented wealth of sociological, anthropological, and political science contributions to the understanding of urbanization processes – in particular in Latin America – in relation to developments in the hinterland of the emerging cities (e.g., Hauser 1961; Rabinovitz and Trueblood 1971; Southall 1973; Cornelius and Trueblood 1974, 1975; Portes and Browning 1976; Portes and Walton 1976; Roberts 1979). Some of the central issues addressed by this literature, which also constitute the framework for this chapter, can be summarized as follows (Van Young 1979: 593):

> "Two of the central issues in the history of Latin America have been the nature of the great rural estate and the geohistorical evolution of regions with cities at their centers. It is only fairly recently, however, that the growth of the urban culture in Latin America has begun to be viewed as the complementary process of regional agrarian and demographic development. On the one hand, we know a good deal about the historical evolution of the great estate in Latin America—the plantation, the hacienda, and the estancia in their many incarnations. The old, monolithic model of the feudal, noncapitalist large rural estate has disintegrated into a confusing welter of different types and subtypes of rural production units ... One of the most important elements in refining our understanding of the way in which various types of large rural estates functioned in the past is the role of markets in world and regional economies. Yet, it is precisely this key factor which is the least well understood of the constellation of variables making up the historical definition of the great landed estate."

In the context of the northern Bolivian Amazon, 'large rural estate' stands for the *barraca* while Riberalta is the regional urban center in question. The growth of Riberalta will consequently be viewed as a complementary process of regional forest-agrarian and demographic development. The disintegration of the traditional *barracas* into a broad array of rural settlement types – in the context of this chapter mainly understood as production units – requires a refined settlement typology that goes beyond the traditional *latifundista-minifundista* divide: "Once settlement patterns are convincingly related to the interplay between institutions and geography, one would hope to make finer discriminations than the gross antithesis between plantation and homestead economies that is so prominent in the 'staple theory' literature" (Morse 1974: 432). For the case of northern Bolivia, Romanoff (1992: 125) also argues in favor of a finer settlement discrimination: "If more of the Bolivian tropical forest region had been included in the study area, it would have been necessary to add several kinds of settlements ... Especially in more remote sectors of the study area, there are people of Amerindian ethnic origin, and a finer settlement typology would have been useful." Settlement differentiation will be analyzed within the historical framework of changes on the

[456] The '*barraca* sector' stands for the assemblage of the four types of *barracas* distinguished in the settlement typology in Section 4.3, whereas the '*campesino* sector' denotes the six types of independent communities likewise discriminated.

international rubber market that largely have shaped what we encounter in northern Bolivia today. Special attention will be paid to the effect the latest rubber crisis had on the redemocratization of land, i.e. the expansion of the *campesino* sector at the expense of the *barraca* sector. In fact, this process contradicts the theory of agricultural involution, according to which rural small producers are progressively displaced by large agro-industrial estates such that in view of limited farm land they face no alternative but out-migrate to the city (cf. Williamson 1988: 426).

In the northern Bolivian Amazon, Riberalta's social, economic, and politico-administrative hegemony roots in the virtual absence of any serious competitor. Guayaramerín, the second largest of the Vaca Diez towns, lacks the eminence of a provincial capital, is home to only half the population of Riberalta, and suffers from its extreme location at the very fringe of northern Bolivia. Cobija, on the other hand, though enjoying the status of a departmental capital, is connected with the Brazilian Amazon rather than with the intrinsic waterways of northern Bolivia. Riberalta thus became the region's integrative center given its strategic location near the confluence of the Madre de Dios and the Beni Rivers and, little downstream, the Orthon River, as well as its urban market, its educational and health facilities, and the relatively broad forest-industrial and administrative employment basis.

The integration of Riberalta with its hinterland reflects a process of general agglomeration and urbanization rather than any specialized function of the town in question. Or, how Van Young (1979: 635) puts it for the case of Guadalajara in western Mexico, "the integration of a city or town with its region ... was rather to be expected, in varying degrees, because of the nature of cities per se. This underscores the vital role of urban concentrations in the overall development of Latin America, and in particular as points of economic crystallization in the countryside." In this context, Riberalta's privileged geographical position as described above should not be overlooked. As early as the 1960s, it was foreseen that riverine settlements, such as Riberalta, which are situated at the junction of major zones may become the key centers in a system of internal trade (see Fifer 1967: 8).

For the case of northern Bolivia, the 'urbanization of the countryside' can be analyzed in the specific context of frontier urbanization as prevalent in contemporary Amazonia. In a landmark book on related processes, Browder and Godfrey (1997: 55-82) point to three earlier phases of urbanization in Brazilian Amazonia, viz. the colonial period, the Pombaline reforms of the late 18th century,[457] and the Amazon rubber boom. In northern Bolivia, it was only the latter which opened up the region, linked it to the world market, and initiated a colonization and, subsequently, urbanization process. What emerged as a rubber frontier was succeeded by a Brazil nut and, more recently, timber and palm heart frontiers. The true impetus to frontier urbanization came only with the recent contraction of the rubber frontier.

Principally the framework of frontier urbanization calls for defining its two constituting elements. While 'urbanization' is rather unanimous (see Section 5.1), the term 'frontier' defies unambiguous definition for the obvious dearth of an underlying congruent concept.[458] An

[457] Compare footnote 186.

[458] Fifer (1967: 2), for example, suggested that in the 1960s much, if not almost the whole, of lowland Bolivia could be regarded as frontier country, without providing an exact definition of the relevant term. Fifteen years later, however, she specified her concept: "The tendency to describe almost any area of sparse population as a settlement 'frontier' is not uncommon, especially in studies of Latin America. What matters, however, is what is going on *within* such sparsely populated zones, or indeed within more densely populated zones which are in an active frontier stage. Frontiers of settlement may be rural or urban, planned or spontaneous. Whatever their

approximation can be reached by distinguishing six criteria[459] which define the term in practice (Browder and Godfrey 1997: 85-6):

demographic: frontiers are characterized by low population densities but high population growth, due mainly to in-migration.

political: frontiers are strongly shaped by the institutions that open and organize them; frontiers opened by state-borne colonization projects are likely to be very different from those that owe their existence to private endeavor.

economic: many frontiers entail commodity fronts that typically exist for relatively short cycles.

social: frontiers are social spaces, i.e. they are defined by the predominant social group or mode of production found there; for example, agrarian frontiers of small farmers can be distinguished from corporatist frontiers occupied by large-scale cattle ranches, mining projects, plantation agriculture, and the like.

cultural: cultural frontiers become manifest, *inter alia*, in ethnolinguistic or religious boundaries.

temporal: all frontiers have a finite temporal connotation; once fully incorporated into the national space economy, the frontier 'closes'; yet the conceptualization of a frontier linearly progressing from opening to closure would be an oversimplification.

Focussing first on the demographic frontier which has predominantly shifted to the urban areas, we realize that the conceptualization of 'urbanization' is closely related to that of migration[460]. As migration is a "complex phenomenon" (Leloup 1996), a great body of literature has been dedicated to specific case studies, while daring scholars have even attempted a general migration theory (see Lee 1966, Gugler 1969, Bouvier *et al.* 1976, Brown 1991, Stark 1991). Part of these theories will be drawn on in Section 5.1. Suffice it here to say that both demographers and geographers tend to oversimplify the variability of migration:

> "Although basic causes seem straightforward, migration is of a highly variable nature. Although most demographers and urbanists have focused on rural-to-urban migration, recent evidence points to a much more complex set of migration streams. Urban-to-urban, rural-to-rural migration, and, at early stages of development, circular migration[461] are among the types of migration found to predominate in many Third World countries" (Kasarda and Crenshaw 1991: 475).

Another phenomenon often neglected are so-called migration chains, i.e. "migrants follow by preference routes chosen by previous migrants" (Leloup 1996: 106). The same author points to an internal feedback mechanism, viz. the important influence of memory in the case of multiple migrations: the more people migrate, the more they are aware of, and open to, opportunities offered by regions other than their own (ibid.: 107). Such an effect of memory was obviously at play in northern Bolivia when ever more *barraca* residents followed the traces of the 'pioneer migrants' to town. Given the importance of social networks that stretch

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origins and location, they are distinctive areas of new and recent settlement (or resettlement) which focus a high degree of social, economic, and political change relative to their surrounding areas" (Fifer 1982: 407).

[459] The authors mention only five criteria but add the temporal frontier aspect as an additional characteristic. Yet it seems preferable to include it as a sixth criteria for the purpose of this study.

[460] "Migration is broadly defined as a permanent or semipermanent change of residence. No restriction is placed upon the distance of the move or the voluntary or involuntary nature of the act, and no distinction is made between external and internal migration" (Lee 1966: 49).

[461] Circular migration refers to a migrant's moving back-and-forth between the place of origin and the place of destination. It may involve a series of sequential migration outcomes (Ortiz 1992: 2), but is not to be confused with seasonal migration, also called cyclical migration (see Isbell 1974: 246).

beyond the rural-urban divide, the first migrants who had successfully established in town gave an impetus to those who had remained behind. The migration chain consequently linked the pool of potential outmigrants to the attraction, with the 'memory factor' becoming manifest in complex relations which reproduced multiple indirect effects (Leloup 1996: 107). In the context of frontier urbanization, migration stands chiefly for rural-to-urban migration whose theoretical premises are likewise addressed in Section 5.1.

In political and economic terms, the frontier characteristics in northern Bolivia are less complex than its demographic features: colonization programs have been launched outside the region and hence are of no relevance in the context of this study. The various commodity fronts that are characteristic of economic frontiers have been analyzed in the two preceding chapters and need not be repeated here. The social foundation of the frontier roots basically in the antagonism between the *barraca* sector on the one hand, and the independent *campesino* sector on the other, though it shall be demonstrated that a certain continuum exists. Culturally we might expect a frontier between the non-indigenous or mestizo population and the remaining indigenous groups. Finally, the concept of the temporal character of a frontier should might prove to be too narrow. Rather, it should also allowing for non-linear processes, as reflected for example in the cyclic manifestation of expansion and contraction of the rubber frontier.

The following guiding questions will be touched upon in this chapter:

(1) Why did/does income derived from gathering, processing, or sale of Brazil nuts and other NTFPs vary across households in rural areas?

(2) In what way did different extractive economies interact with social, economic, and political changes?

(3) Why and by what means did itinerant traders, middlemen, patrons, and firms establish economic ties and/or dependency relations in the NTFP trade?

(5) Why did/do agro-extractive households migrate from rural to urban areas whilst others continue to secure their livelihoods in the forest?

Methodology and methods

This chapter is based on a village survey conducted together with Ariènne Henkemans, Ph.D. student at Utrecht University, between December 1996 and July 1997.[462] We investigated 163 rural settlements out of a total of an estimated 700 rural settlements in the region. The survey covered all major roads and rivers in the seven provinces of northern Bolivia. In 1997, the settlements surveyed were home to 3,737 family units comprising around 22,000 individuals, equivalent to about two-fifths of the region's rural population.[463] The remotest settlements

[462] The initial phase of the survey – in this study referred to as Village Survey 1997 – was carried out jointly. Later on we continued individually to cover as many settlements as possible. Altogether, A. Henkemans and D. Stoian conducted around one-third and two-thirds of the interviews, respectively.

[463] According to the national census conducted in 1992, the rural population in the Department of Pando and the Province of Vaca Diez amounted to 41,562 (INE 1992a, b). As to the Province of Iturralde, no separate data are available for its northernmost part. Assuming that 30% of Iturralde's then 1066 inhabitants (INE 1997e) populated its northernmost part, the rural population of the study region totaled nearly 42,000 in 1992. According to projections of INE (cf. 1997e), the region's rural population increased to around 55,000 by 1997. This figure seems exaggerated, as it implies a rural population growth of 5.6% between 1992 and 1997. Our village survey suggests a rural population comprising roughly 9000 family units or some 52,000 persons in

(walking distance of more than two hours from a road or river) were underrepresented in the sample. Military bases, individual farms (*granjas*) and cattle ranches (*estancias*) were disregarded because of their minor importance with respect to forest product extraction. Settlements founded less than a year before, which are typically inhabited by one or two families, were also excluded.

It was deliberately refrained from applying a questionnaire because of the "inadequacy of the questionnaire surveys taken at the household level" (Dietz 1996: 23); this for two reasons. First, a questionnaire is often looked at by the respondents with skepticism and hardly helps building confidence. Second, a questionnaire compels both the interviewer and the respondent to follow a strict question design rather than allowing for the evolution of a casual conversation. We therefore opted for semi-structured interviews as our main method of data collection, complemented by participant observation and group discussions. The interviews were based on a thematic list (*Gesprächsleitfaden*) including the main topics to be addressed without pre-determining the sequence of the questions. This approach provides the opportunity to insert *ad hoc* questions on new aspects brought up by the respondents (Atteslander 1995: 162). The answers were memorized and filled into a data sheet upon completion of the interview. This had the advantage not to disturb the smooth flow of the conversation by taking notes. In the few cases when additional need for information arose upon writing the minutes from memory (*Gedächtnisprotokoll*) (see Atteslander 1995: 175), we could return to the respondent for clarification. Being aware that "careful documentation, checking, and cross-checking to find anomalies and contradictions between informants" (Posey 1992: 27) is as much needed as for the surveillance of a single informant's responses, we included several questions which allowed triangulation.

The interviews aimed at obtaining information on village infrastructure, land tenure, agricultural production, forest product extraction, trade and migratory patterns, as well as social organization and external support from governmental or non-governmental organizations. Interviewees were elected or appointed village leaders or school teachers in the case of independent communities, and patrons, administrators, or caretakers in the case of *barracas*. Site selection aimed at covering the whole continuum of rural settlements from *barracas* at the upper reaches of important tributaries to independent communities in the very vicinity of town. Road-based settlements were studied between Riberalta and Cobija, along the road Riberalta-Guayaramerín-Cachuela Esperanza-Riberalta and various side-roads in the Province of Vaca Diez. River-based settlements were studied along the Madre de Dios River between Riberalta and the confluence of the Sena River, along the Beni River from the confluence of the Orthon River until the mouth of the Biata River, as well as the entire Manupare, Sena and Orthon Rivers. Included were settlements within a distance of only a few minutes drive from town up to settlements seven days upriver.[464]

Typology of rural settlements

Previous studies on northern Bolivia discriminated only few rural settlement types. *Barracas*, for instance, were sub-divided into enterprise-run *barracas* and patron-run *barracas* (CIDOB

1997. This figure is half way between INE's data and the projections of MDSMA which suggest a population of little more than 49,000 in 1997 (cf. 1996: 26-8).

[464] Thanks to PROMAB and IPHAE, we could make use of a light boat with an outboard motor which reduced the travelling time to the remotest settlement on the Manupare River to two days.

1979a, Pacheco 1992),[465] classified according to their production capacity (Ormachea and Fernández 1989, Pacheco 1992, DHV 1993b, Assies 1997)[466], or regarded as homogenous (Romanoff 1992). Independent communities were categorized as indigenous or peasant communities (Ormachea and Fernández 1989, DHV 1993d), if not treated indiscriminately (CIDOB 1979a, Romanoff 1992, Assies 1997).

Results of our village-level survey suggest that more types of *barracas* and independent communities can be distinguished. First, rural settlements in northern Bolivia vary considerably in terms of resource endowment and accessibility. Second, there is high variability of land tenure, access to natural resources, employment and income opportunities, location in relation to urban and/or market centers, ethnic composition, and settlements' histories. A finer discrimination is believed to permit a deeper understanding of present livelihood systems, based on which future trends can better be predicted. With Brazil nut representing the single largest source of rural income in recent years, its average annual production was used as one of the key variables[467] for stratification (Tables 4-1 and 4-2).

[465] Without providing a more refined typology, Pacheco (1990: 6) points to the fact that *barracas* differ in relation to the capital invested, the number of laborers, and the degree of labor division.

[466] Ormachea and Fernández (1989: 17) discriminated three sizes of *barracas* according to the number of rubber trees. After the conclusive halt of Bolivian rubber production in the mid-1990s this discrimination became obsolete. DHV (1993b: 5) suggests a classification based on the mean annual production of Brazil nuts but fails to account for small *barracas* owned by large patrons and the considerable differences between large *barracas* controlled by patrons and those run by enterprises.

[467] Lazarsfeld (1937: 120) distinguishes three different kinds of attributes a typology can be based on, viz. a characteristicum, a variable, and a serial. A characteristicum is binary in nature, e.g. something can either be square or not square; a variable permits any number of graduations and implies the possibility of measurement; a serial is an attribute of an object which can be predicated only in comparison with another object. In this sense, the average amount of Brazil nut produced in a given settlement is a variable.

Table 4-1 Typology of *barracas* in the northern Bolivian Amazon.

Stratum	Criteria	Indicators	Salient features
Small patron *barracas*	Low Brazil nut production **and** *barracas* run by small patrons	Annual production ≤ 2,000 boxes **and** patron runs one *barraca* only	Mainly founded in areas not claimed by others during earlier rubber crises; ownership often shared by several brothers who live permanently on the *barracas*; Brazil nuts gathered by owners but outside collectors hired when Brazil nut production exceeds the locally available labor force.
Large patron *barracas*	High Brazil nut production **or** *barracas* run by large patrons	Annual production > 2,000 boxes **or** patrons run more than one *barraca*	Owned by patrons who possess one large and/or several smaller *barracas;* large patrons tend to reside in town and employ caretakers who are the only permanent residents; Brazil nut gatherers are hired from town or nearby communities.
Enterprise-run *barracas*	*Barracas* run by an enterprise	*Barracas* run by a timber and/or Brazil nut company	Owned by two types of enterprises, viz. old-established local firms or Santa Cruz-based enterprises also engaged in palm heart and timber processing; Brazil nut gatherers are recruited from town.
Barracas in transition	*Barracas* are in transition to an independent community	OTB* exists but resource use still controlled by the patron **or** OTB not existing but resource use controlled by the residents	Ongoing conversion into independent communities is reflected in patrons controlling the Brazil nut harvest while losing political power (OTB founded by residents) **or** patrons oppressing the foundation of an OTB but the residents managed to split up the territory into individual parcels.

Source: Own elaboration (Stoian and Henkemans 2000).

Note: One box of Brazil nuts measures 51*27*35 cm. At the transshipment point it typically contains 26 kg of in-shell nuts, but its official weight is 22 kg (DHV 1993b: 32). * OTB (*Organización Territorial de Base*) is a local autonomous body similar to a village council.

Broadly speaking, *barracas* in northern Bolivia can be discriminated into smaller and larger production units (Table 4-1). They differ significantly in terms of infrastructure, social relations, labor organization, and access to forest resources. Large *barracas,* run by large patrons or enterprises, have lost most of their permanent population in the wake of the latest rubber crisis. Their owners chiefly reside in town from where they recruit the laborers needed during the Brazil nut season (*zafra*). In contrast, small patron *barracas* are mostly owned by several families belonging to the same kinship who reside on their *barracas* for most of the year. These *barracas* are less dependent on externally recruited labor.

In addition to these pure *barracas*, *barracas* in transition can be singled out as a stratum of its own. They share features of both *barracas* and independent communities, as they are subject to a process of conversion.[468] On some of these *barracas*, the patrons continue to control the sale of forest products while the *barraca* residents have started to gain political power through the foundation of Territorial Grassroots Organizations (*Organizaciones Territoriales de Base* or OTBs). Ideal-typically, OTBs are autonomous village councils in which the villagers decide upon community affairs.[469] *Barracas* are also regarded as being in transition when the residents have succeeded in splitting up the territory into private parcels in spite of the patrons' oppression of founding an OTB. On the latter, the residents share the power over the sale of Brazil nuts and other forest products. The transitional process is even more complex, since on a few *barracas* it was the patrons who founded OTBs, thus gaining access to the funds of the Popular Participation Program without losing control of the resources from the surrounding forests.[470]

Unlike the *barracas* where income opportunities and land use are largely determined by patrons, independent communities autonomously establish the institutional arrangements governing natural resource use. The mode of production in independent communities finds its functional equivalent in the Brazilian 'autonomous' rubber production.[471] In Bolivia, the vast majority of independent rural families works individual parcels,[472] reflecting a trend that has

[468] As early as the 1920s, Chávez (1923: 16, my trans.) argued in favor of such a conversion: "It is about time to transform the *barraca* into small hamlets and villages, inculcating the national sentiment that fortifies."

[469] OTBs are pre-requisites to access the funds provided by the Popular Participation Law (*Ley de Participación Popular*). This law, put into force in 1994, aims at fostering village development through decentralization and transfer of funds from the national treasury to the municipalities (*municipios*) and lower administrative units.

[470] This kind of 'dual ownership' is encountered, for example, in El Sena (Sena/Madre de Dios Rivers) and Humaita (Orthon River). The independent community in El Sena was founded on about 100 ha next to the rivers, while the surrounding *barraca* covers some 22,000 ha rich in Brazil nuts, palm hearts, and timber. With most of the monetary transactions being controlled by the former patron, he was appointed the mayor of the municipality. Thus he has direct access to the funds of the Popular Participation which are invested in the installation of electricity, drinking water, and other construction works. Likewise, the very center of Humaita, a *barraca* owned by the Santa Cruz-based Berna Norte Group, was officially converted into an independent community. A friend of the *barraca* administrator was appointed mayor of the municipality, which is based on the same *barraca.* Part of the funds thus available were used to purchase a satellite dish for his TV set. In both communities the villagers had elected an OTB president of their own. These presidents, however, are heavily dependent on the respective mayor and, consequently, the villagers have little say on the use of the funds, let alone the resources of the surrounding *barraca*.

[471] "This autonomous mode of production is gradually undermining the traditional [i.e., patron-controlled] production system and is currently concentrated in more accessible areas, where debt peonage has encountered greater difficulties in reproducing" (Allegretti 1990: 255).

[472] Size of individual parcels varies chiefly between 20 and 80 ha, in particular in the densely populated rural areas of Vaca Diez Province. As population density decreases in rural Pando, parcel sizes range from 50 to 150 ha with maximum sizes of 500 ha along the Puerto Rico-Cobija highway. Parcels typically consist of agricultural fields (*chacos*), kitchen gardens (*huertos*), forest fallows (*barbechos*), high forest (*monte alto*), and, to varying degrees, grasslands (*sujales*) infested by sujo (*Imperata brasiliensis*). The infestation with sujo is not a recent

been observed elsewhere in South America.[473] Six types of independent communities can be differentiated by accounting for the relative importance of wage labor, commercial agriculture, and Brazil nut extraction, as well as ethnic composition and the infrastructure available (Table 4-2).

phenomenon: as far back as 1883, it was reported that some forest settlements were invaded by the aggressive grass species up to their very centers (Armentia 1883: 17).

[473] In the Ecuadorian Province of Carchi, for example, land was redistributed under the agrarian reform of the early 1960s: "The beneficiaries first organized themselves in co-operatives for the purpose of buying and paying for the land, but as soon as they had paid off the debt, or a sizeable portion thereof, they divided the land into private parcels, in which there is now an active market despite the often dubious legality of the title" (Lehmann 1986: 616). In northern Bolivia, the situation is virtually identical in that independent *campesinos* unified to obtain the status of a juridical person (*personería jurídica*). This legal requirement, however, does not prevent them from clinging to the established system of private parcels that has existed since the very foundation of their communities.

Table 4-2 Typology of independent communities in the northern Bolivian Amazon.

Stratum	Criteria	Indicators	Salient features
Peri-urban communities	good access to facilities in nearby town or rural sub-center	wage labor is main source of cash income	very frequent commuting to nearby town or rural sub-center to market agricultural produce and/or search for employment; poor natural resource endowment due to high deforestation in urban surroundings; one fourth of the families seasonally gathers Brazil nuts on *barracas*;
Agrarian communities	high importance of commercial agriculture and low potential of Brazil nut extraction	agriculture is main source of cash income **and** annual Brazil nut production ≤ 17.3 boxes/household	frequent commuting to nearby town to market agricultural produce rather than seeking employment; land conflicts with urban landowners; conversion into arable jeopardizes forest product extraction; one third of the families leaves for the Brazil nut harvest on *barracas*;
Agro-extractive communities	moderate importance of commercial agriculture and moderate potential of Brazil nut extraction	agriculture is main source of cash income **and** annual Brazil nut production > 17.3 ≤ 104 boxes/household	moderate commuting to nearby town to market agricultural produce; good access to forest resources; Brazil nuts mainly gathered on own parcels but one third of the families leaves for the harvest on *barracas*;
Extractive communities	low importance of commercial agriculture and high potential of Brazil nut extraction	Brazil nuts from own parcels are main cash income **and/or** annual Brazil nut production > 104 boxes/household	agriculture geared to subsistence due to low market access; few land conflicts; high access to forest resources; occasional need to hire outside collectors during the Brazil nut harvest; only one fifth of the families leaves additionally for the harvest on *barracas*;
Indigenous communities	majority of inhabitants belongs to the region's indigenous groups		would need to be classified as agro-extractive or extractive communities, if they were not distinct in several important aspects: traditional lifestyle including own languages, strong group identity, forests as common property resources instead of individual parcels;
	inhabited by people native to the region		
Rural sub-centers		strategic location at junction of road and river **and** secondary school and health post available **and** number of households ≥ 40	well-developed infrastructure (schools, health centers, churches, communications, generator); good transportation (road, river and air transport); high population growth that even exceeds that of urban centers; access to government programs through local municipalities;
	good infrastructure, adequate facilities, above-average population		

Source: Own elaboration (Stoian and Henkemans 2000).

Note: To determine the importance of Brazil nuts gathered on community territory, opportunity costs of labor were calculated by referring to a monthly wage of Bs.520 (US$99.8) in 1997. This amount was compared to the income from Brazil nuts from the own territory. Adopting a mean price of Bs.30 (US$5.76) per box in independent communities in the season 1996/97, the income from 17.3 boxes was equivalent to a monthly wage. Communities with their mean annual production valuing one to six monthly wages (> 17.3 ≤ 104 boxes) and more than six monthly wages (> 104 boxes) were classified as agro-extractive and extractive communities, respectively. Other communities were stratified accordingly.

In all types of independent communities[474] subsistence agriculture is crucial, whereas the importance of agriculture geared to the market is subject to pronounced variability. In general, the area cultivated and the degree of commercialization increase with better access to markets. This is especially true of the communities located within less than an hour traveling distance from town. In these areas independent communities compete for land with the urban-based owners of cattle ranches and farms. The latter, though, provide the villagers of nearby communities with more opportunities for (agricultural) wage labor. As the areas surrounding the urban centers are densely populated, conversion of forests to arable or pasture is more pronounced. The resulting decline in forest-based income has largely been offset through increased income from agriculture and wage labor. On the other hand, a substantial number of independent rural inhabitants generates additional income through participation in the Brazil nut harvest on a *barraca* (see also Stoian, in prep.).

While scarcity of land along with good access to the urban centers is characteristic for many peri-urban, agrarian, and agro-extractive communities, the opposite is true of the majority of extractive and indigenous communities. Endowed with vast tracts of forest land, these communities are deprived of access to agricultural markets and urban services. Instead, opportunities to derive income from forest product extraction are far better than in other community types. NTFP-based income, however, is higher in extractive communities, as many indigenous communities are less integrated into the market economy. Another distinct feature is the way indigenous communities organize resource management. In all but two of the nine indigenous communities sampled, fields were cultivated by individual families while forests are managed as common pool resources.[475] In contrast, 83% of the non-indigenous or mestizo sample communities divided their territories, including forest, into parcels managed by individual families.

Rural sub-centers, too, stand out in various aspects.[476] They are strategically located at the intersection of principal roads and rivers.[477] On average they are as distant from town as extractive communities (see Table 4-3), but they display a well-developed infrastructure and are seat of a municipality or sub-municipality. The resulting access to funds of the Popular Participation Program enabled their majors to invest in infrastructure development. This in turn stimulated an impressive influx of immigrants. In terms of population growth, rural sub-centers depict by far the highest dynamism not only among rural settlements but within the

[474] These communities reflect an actual distribution that corresponds to the two major types of rural habitat as described by Fawcett (1939: 153): some are organized as compact villages or hamlets, while others display the pattern of scattered settlement over the commune. The latter type is often encountered along the principal roads where houses along with individual parcels of a given community are lined up every 100-1000 meters. Agglomerated settlements are typically encountered along the waterways or along secondary roads.

[475] Out of a total of eight indigenous peoples in the region, four were included in the sample, namely Tacana, Esse Ejja, Cavineño and Araona. The four remaining groups are Chácobo, Pacahuara, Yaminahua and Machineri (cf. CEJIS 1995, CPTI-CIDOB 1997).

[476] The sample yielded eight rural sub-centers, namely Gonzalo Moreno, Blanca Flor, El Sena, Conquista, Puerto Rico, Porvenir, Rosario del Yata and Cachuela Esperanza (see Map 1, Section 1.4.1).

[477] Strategic location, here, refers to economic and infrastructural features rather than military aspects. For similar locations in zones of strife, the term 'strong point villages' has been suggested (Aurousseau 1920: 229-30). Brady (1997: 602) points to the fact that in addition to ecological factors, ideology and cosmology play an important role in the choice of the actual placement of human settlements. These aspects, however, seem to be of minor importance in northern Bolivia as far as non-tribal settlements are concerned.

region as a whole. Between 1992 and 1997, their population grew on average by 21% annually, thus outweighing long-term urban growth by more than a factor of 3.[478]

Viewing the region as a whole, *barracas* and independent communities not only differ in terms of resource endowment and socio-political organization, but also as regards their spatial distribution and demography (Table 4-3).

Table 4-3 Mean travelling distance to the nearest town, accessibility by road, and number of households in northern Bolivia, by settlement type.

	n	Travelling distance to the nearest town (hours)	Settlements accessible by road (%)	Households per settlement in 1997 (#)
Barracas	73			
Enterprise-run *barracas*	14	15.6 (±9.9)	14.3	6.2 (±8.6)
Large patron *barracas*	22	11.9 (±9.2)	36.4	3.9 (±5.5)
Small patron *barracas*	22	9.4 (±7.7)	31.8	3.0 (±2.6)
Barracas in transition	15	6.8 (±4.5)	73.3	11.6 (±8.6)
Independent communities	90			
Peri-urban communities	7	0.3 (±0.2)	100.0	27.9 (±22.1)
Agrarian communities	19	0.6 (±0.5)	94.7	19.9 (±14.5)
Agro-extractive communities	22	0.7 (±0.4)	100.0	29.6 (±15.7)
Extractive communities	25	2.8 (±2.3)	84.0	27.6 (±19.5)
Indigenous communities	9	10.2 (±15.0)	33.3	26.8 (±27.3)
Rural sub-centers	8	2.7 (±2.2)	100.0	145.9 (±85.4)

Source: Village-Level Survey 1997

Note: Travelling distance to the nearest town refers to the net-travel time needed during the drier period of the year (April through November); in the case of road-based settlements, it denotes the average duration of transport by truck, pick-up, or bus; in the case of settlements not accessible by road, it is complemented by the walking distance to the roadhead or embarkation point and/or the time needed for river transport. In the case of river-based settlements, travelling distance stands exclusively for river transport when no other means of transport are used. Standard deviation in parentheses.

Except for indigenous communities, all independent communities are much closer to town than are *barracas* (Table 4-3). Most of the peri-urban, agrarian, and agro-extractive communities are within a traveling distance of less than an hour to the nearest town. Extractive communities are more distant, as are rural sub-centers. But the general picture is that the *barraca* area occupies the more remote pockets of the region, whereas the community area is located closer to town.

[478] In the period 1976-1992, populations of Riberalta, Guayaramerín and Cobija grew annually by about 6% (INE 1992a, b). Long intercensal periods as this pose the problem of defying a clear picture of trends in population growth. But the more detailed breakdown in Table 4-4 helps elucidating short-term trends.

Nowadays the traditional *barraca* system is challenged in two ways. First, in the region's remotest areas large and small patron *barracas* gave way to enterprise-run *barracas*. Historically, large and small patrons were, with a few exceptions, the only *barraca* owners after the disintegration of the Suárez empire. But many of them lost their interest or capability to maintain the *barracas*' infrastructure, in particular in the wake of the latest rubber crisis. In the first place it was the remotest patron *barracas* that were sold to enterprises in the late 1980s and early 1990s. The least remote *barracas*, on the other hand, are in the process of being converted into independent communities. These *barracas* in transition are primarily encountered along the increasing number of roads[479] that cut into areas previously deprived of marketing channels other than those controlled by the patrons.

That road construction is a pivotal agent of change is reflected in the high percentage of *barracas* in transition connected with a road (Table 4-3). More than two-thirds of them but less than one third of the other *barraca* types are accessible by road and, consequently, *barracas* in transition are relatively nearest to town. Road construction enabled a multitude of itinerant traders to impinge on territories that were hitherto under the sole control of a patron. This encroachment signified the emergence of multiple-power domains on the traditional single-power domain in form of the *barracas* (cf. Adams 1964, 1967a, b; Singelmann 1975: 393). It is anticipated that the ongoing expansion of the region's road network will further undermine the *barraca* sector. Already today, 88% of the independent communities have road access compared to only 38% of the *barracas*. Virtually all peri-urban, agrarian, agro-extractive communities, and rural sub-centers are accessible by road. In contrast, one sixth of extractive communities and two-thirds of indigenous communities are only accessible by river.

As long as rubber tapping was viable, i.e. by about 1986, the *barracas* accommodated 54% of the rural population while only 46% resided in independent communities. Nowadays, however, the vast majority of the rural population prefers to live independently from a patron: 89% reside in independent communities as compared to 6% on pure *barracas* and 5% on *barracas* in transition (Table 4-3). The latter show the highest average of residents relative to other *barraca* types, reflecting the appeal of the ongoing conversion process. It is anticipated that most of the few families remaining on pure *barracas* will leave in the mid and long term, unless infrastructure development occurs in small and large patron *barracas*. The example of investments in some enterprise-run *barracas* and their comparatively higher population shows that even today pure *barracas* can attract permanent residents by providing employment and improved facilities.

The population of peri-urban, agro-extractive, extractive and indigenous communities averaged little less than 30 families each (Table 4-3). Agrarian communities, however, had only 20 families on average, as they face land scarcity and the lack of alternative income

[479] Between 1987 and 1993, the length of unpaved roads in the Pando and Beni Departments increased by 65% and 31%, respectively (INE 1989, 1994). Nevertheless, on a territory of 63,800 km² Pando's road infrastructure is still very limited, with only 800 km of roads (Peralta *et al.* 2000: 14). In 1997, out of the total of 2968 km of tarmac road nationwide (INE 1999a), the Departments of Beni and Pando were had a mere 69 km and 3 km, respectively (INE 2000a, b). Ironically, the recent blacktopping of the 30 km section between Cobija and Porvenir signified a tenfold increase of Pando's tarmac roads. The section is both strategically and historically important: it was preceded by a dirt road opened as far back as the early rubber epoch so as to move Suárez rubber from the Tahuamanu-based *barracas* toward the Acre-Purus river system (Fifer 1970: 130).

sources.[480] Peri-urban communities, for example, also suffer from limited availability of agricultural land, but their inhabitants can rely on wage labor offered in the nearby town. Agro-extractive communities are largely deprived of this income source, but the higher availability of land enables their inhabitants to base their economy on market-oriented agriculture coupled with extractive activities. Rural sub-centers have by far the highest average population and display the best developed infrastructure in the rural areas, thereby attracting immigrants from the rural hinterland. Migration to rural sub-centers is part of a complex process of migratory responses to the recent rubber crisis on the one hand, and the general crisis of the *barracas* on the other. Migratory trends of northern Bolivia therefore deserve further consideration.

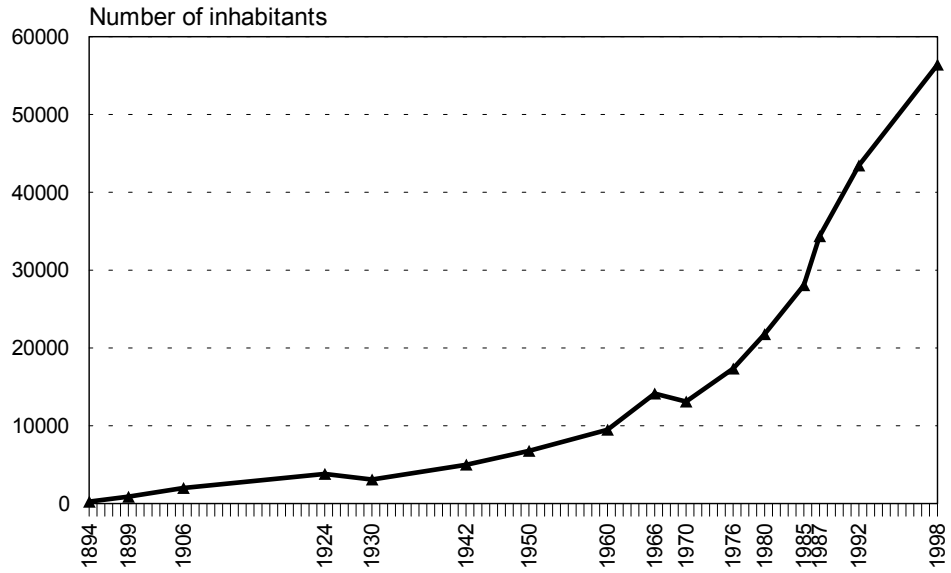
Migratory trends in rural settlements

A high degree of geographical mobility has been common in northern Bolivia since before colonization (CIDOB 1979a: 207). Indigenous groups regularly crossed the borders to Peru and Brazil, with *Esse Ejja* and *Tacana* maintaining this habit up to the present. The early 20-th century recruitment of thousands of laborers from outside the region signaled a high inter-regional migratory flow. In those years, rubber tappers and their families switched *barracas* despite the patrons' tight grip on the labor force. Intra-regional migration increased after World War II through the reorganization of the *barraca* economy and the increased emergence of independent communities following the Agrarian Reform in 1953. A further characteristic are seasonal migratory flows between the urban and rural areas. Such urban-rural labor moves at times of the Brazil nut harvest are not a recent phenomenon (see also Section 5.4.1). As early as the 1970s, i.e. well before the latest rubber crisis, 12.5% of Riberalta's then population of 18,000 temporarily migrated to the rural areas to extract rubber or Brazil nuts (CIDOB 1979a: 216-7). Nowadays, some 5000-6000 urban-based Brazil nut gatherers, equivalent to 10% of Riberalta's present-day population, participate in the *zafra*.

Contrary to popular belief, in-migration to Riberalta was only partly related to the latest rubber crisis (see also Section 5.3.2). The town received the highest influx of migrants between 1980 and 1987, with its population growing by 6.7% per year. The year 1986 marked the turning point in Bolivian rubber production (see Table 2-5 and Section 2.9), setting in motion an impressive rural-urban migratory flow within a few months time. An enormous number of tapper families arrived from the *barracas* at Riberalta by 1987, but later waves were less pronounced (Figure 4-1). As rubber production declined gradually there was no sudden drop of employment opportunities in the rural areas.

[480] As each family encompasses about six persons on average, the population of settlements in northern Bolivia corresponds well to the general size of settlements in Amazonia which is reported to vary between 50 and 150 inhabitants (Steward 1949: 676). The relatively small size of such settlements has been attributed to resource scarcity (e.g. Padoch and Vayda 1983: 303, Frechione 1990: 120)

Figure 4-1 Population growth of Riberalta, northern Bolivia, 1894-1998.



Source: Data of the national censuses 1900, 1950, 1976 and 1992 from De Mesa *et al.* (1997: 760), other data from various unpublished sources.

Note: Years indicate the points in time for which data are available.

Founded in 1894, Riberalta grew steadily except for the periods 1924-30 and 1966-70 (Figure 4-1), when its population declined at times of a marked rubber low. In contrast, in the period 1985-87, which coincides with the onset of the latest rubber crisis but is also characterized by the repercussions of Bolivia's mid-1980s general economic crisis, the town experienced its most vigorous growth. The annual growth rate of 10.7% between 1985 and 1987 soon leveled off to 4.8% in the five years to come. It stabilized at 4.4% annually in the period 1992-98 (Secretaría Regional de Salud, unpublished data).[481]

Demographic data from the Department of Pando and the Province of Vaca Diez shed further light on migratory patterns (Table 4-4).

[481] Fluctuation of growth rates compares to earlier periods: Riberalta's population grew by 3.4% annually between 1950 and 1970, by 5.5% in the period 1970-76, and by 4.8% from 1976 to 1980 (CORDEBENI cited in Van Beijnum 1996: 12). Comparing Riberalta's post-war growth rate to demographic trends of urbanization worldwide, it becomes apparent that there is nothing unique about the town's long-term growth. According to UNDESA (1985, cited in Kasarda and Crenshaw 1991: 474), approximately 60% of urban growth can be attributed to natural increase and the remainder to migration. As the natural growth of Riberalta is somewhere between 2.5 and 3 percent, its mean growth rate of 4.5% annually in the period 1950-1998 signifies a 56-67% contribution of natural increase, being congruent with the global trend.

Table 4-4 Population and its annual growth rates in northern Bolivia, 1976-1992.

	Population 1976	Population 1985	Population 1992	Annual growth 1976-1985	Annual growth 1985-1992	Annual growth 1976-1992
Province of Vaca Diez	42,386	62,405	84,651	+ 4.4%	+ 4.5%	+ 4.4%
Urban	70.4%	73.8%	84.1%	+ 5.0%	+ 6.4%	+ 5.6%
Rural	29.6%	26.2%	15.9%	+ 3.0%	- 2.8%	+ 0.5%
Department of Pando	34,493	46,933	38,072	+ 3.5%	- 2.8%	+ 0.6%
Urban	10.6%	10.3%	26.3%	+ 3.2%	+ 10.9%	+ 6.5%
Rural	89.4%	89.7%	73.7%	+ 3.5%	- 6.0%	- 0.6%
Total	76,879	109,338	122,723	+ 4.0%	+ 1.7%	+ 3.0%
Urban	43.6%	46.6%	66.1%	+ 4.8%	+ 6.9%	+ 5.7%
Rural	56.4%	53.4%	33.9%	+ 3.4%	- 5.0%	- 0.3%

Source: 1976 data from INE (1976a: 25, 1976b: 25), 1985 data from Ormachea and Fernández (1989: 11-2), and 1992 data from INE (1992a: 9, 1992b: 5).

Note: 'Urban' refers to Riberalta, Guayaramerín (Vaca Diez) or Cobija (Pando).

Between 1976 and 1992, the Department of Pando and the Province of Vaca Diez experienced increased urbanization, in particular after 1985 (Table 4-4).[482] This year is an interesting point of reference because it was the last year before the Bolivian rubber market was severely hit by the abrogation of Brazilian rubber subsidies; 1985 was also the year when Bolivia's hyperinflation culminated (Nohlen and Mayorga 1992: 194). To determine the share of population growth that may be related to migration in the wake of these economic crises, the internal growth rate needs to be accounted for.[483] Annual population growth was 2.7% in Bolivia as a whole (Hartcourt and Sayer 1996: 219) but little more than 3% in Pando Department (INE 1992b: 5). Assuming an annual growth rate of 3.0% for northern Bolivia, 1.4% of population growth in Vaca Diez can be attributed to immigration in the period 1976-1992. For Vaca Diez as a whole, there are virtually no differences before and after the reference year. But in Pando Department 1985 marks a clear turning point. Though overall population growth from 1976 to 1992 was slightly positive, two distinct periods are apparent: Before 1985 and hence prior to the collapse of Bolivian rubber trade, Pando received some immigration, but after 1985 it suffered pronounced out-migration.[484]

[482] No such data are available for the northern part of Iturralde Province. With an estimated population of a little less than 1,000 inhabitants, demographic trends of this part of northern Bolivia are rather negligible.

[483] Internal growth is defined as the balance of fertility rate and mortality rate. Population growth combines internal growth and growth due to migration.

[484] Negative population growth of Pando Department (-0.6%) between 1976 and 1992 is not unique for Bolivia. In the same period, rural areas of La Paz, Oruro and Potosí Departments also suffered from out-migration with growth rates of -0,5%, -1,6% and -0,6%, respectively (Banco Santa Cruz 1998: 317). None of Bolivia's nine departments was exempted from rural exodus, with the net-migratory loss amounting to three percent of the rural population during the 1976-1992 period. Negative rates of rural Pando and rural Vaca Diez should

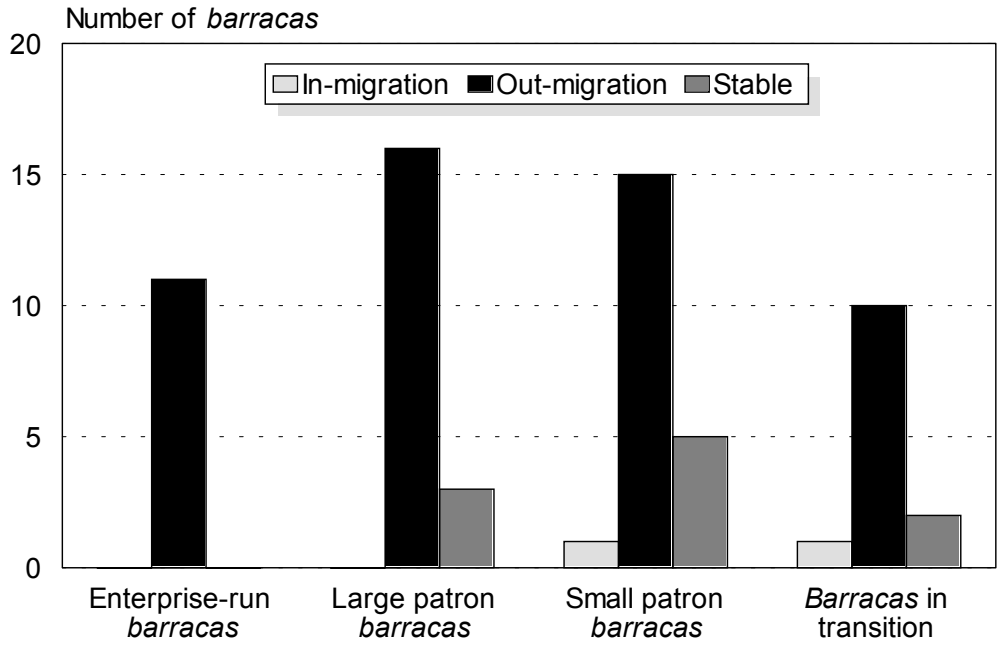
Unlike Pando where the rural population makes up for the majority, Vaca Diez manifests a predominantly urban population. The share of urban and rural populations in northern Bolivia altered only slightly from 1976 to 1985, with all areas experiencing low to moderate in-migration. But after 1985 the urban population grew rapidly at the expense of that in the rural hinterland. In 1998, more than two thirds of the regional population resided in the towns of Riberalta, Guayaramerín, and Cobija. Between 1976 and 1985, Cobija and surrounding rural areas grew at a rate slightly exceeding internal population growth, while Riberalta and Guayaramerín experienced higher rates of immigration. After 1985, both Pando and Vaca Diez recorded marked rural-urban migration. Relative rates were highest in Cobija, but in absolute terms Riberalta received more emigrants from rural Pando than Cobija. In summary, Cobija grew mainly in response to the rubber crisis, whereas Riberalta and Guayaramerín exerted an urban 'pull' on rural-urban migrants long before. The most important motive of migration were the better educational facilities available in town (for further motives, see Table 5-12 in Section 5.3.2).

Though concealed in the above table, there was also urban-urban, urban-rural and rural-rural migration. Between 1976 and 1992, 5013 persons born in the Beni Department had permanently migrated to Pando, out of whom 1943 had shifted their residence only after 1987 (INE 1992b: 14-5). Among the former, 3321 originated from urban centers, in particular from Riberalta and Guayaramerín, with 80% of them settling in rural areas of Pando and only 20% heading for Cobija. Similarly, 93% of those leaving the rural areas of Beni were bound for the rural areas of Pando (cf. INE 1992b: 59). Official statistics do not allow for further details of rural-rural migration, but results from our village-level survey provide evidence that it mainly stands for migration out of the *barracas* to independent communities (see Figures 4-2 and 4-3).[485]

therefore not only be viewed as solely a response to the latest rubber crisis but also be related to the general rural-urban migratory trend in Bolivia.

[485] For further comparison, see Section 5.3.2 and Stoian (in prep.).

Figure 4-2 Net migratory trends of *barracas* in northern Bolivia in the post-rubber era.



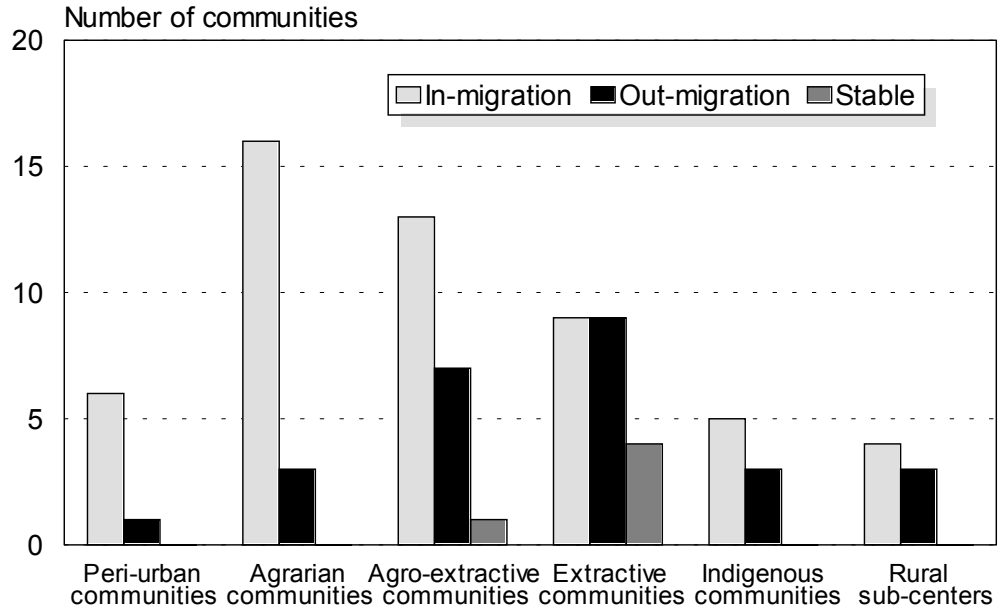
Source: Village Survey 1997.

Note: Trends based on the comparison of the number of resident families on *barracas* (n=64) at the end of the rubber-tapping epoch (terminating 1976-95) to the number of resident families in 1997. No data available for nine *barracas*.

Since the end of the rubber-tapping epoch[486], i.e. since about 1986, 81% of the *barracas* have suffered out-migration, 16% have had stable populations, and only 3% have experienced in-migration (Figure 4-2). Out-migration was most pronounced in enterprise-run *barracas* and large patron *barracas*. Compared to other *barraca* types, small patron *barracas* reflect a lower percentage of out-migration and more stable populations. *Barracas* in transition hold an intermediate position between the *barracas* run by enterprises or large patrons and those of small patrons.

[486] The 'rubber-tapping epoch' denotes the years when rubber had still being tapped. On average, rubber production ceased on the *barracas* in 1986, with the last year of tapping varying between 1976 and 1995. The number of permanent families in the last year of rubber production on a given *barraca* was compared with the number in 1997. To elucidate migratory trends, the influence of internal population growth had to be eliminated. To this end, the number of permanent families in 1997 was computed by assuming an internal growth rate of 3% per year. The computed figure was compared to the actual number obtained through the village-level survey. With a deviation ≤ 15%, the population was defined 'stable'; a deviation > 15% was defined as 'in-migration' (> +15%) and 'out-migration' (> -15%), respectively.

Figure 4-3 Net migratory trends of independent communities in northern Bolivia in the post-rubber era.



Source: Village Survey 1997.

Note: Trends based on the comparison of the number of resident families in independent communities (n=84) at the end of the rubber-tapping epoch (terminating 1977-95) to the number of resident families in 1997. No data available for six communities.

Between the last year of rubber tapping and 1997, 63% of the independent communities surveyed experienced in-migration, 31% out-migration, and 6% have had stable populations (Figure 4-3). Each community type faced, to varying degrees, some influx of newcomers. In-migration was most prominent in peri-urban communities (86% of the communities of this stratum), followed by agrarian communities (84%) and indigenous communities (71%). In these types of independent communities, out-migration played a minor role. Migratory trends of the remaining community types are more ambiguous: one third of the agro-extractive communities and almost one half of the extractive communities and the rural sub-centers underwent out-migration.

Figures 4-2 and 4-3 refer to the number of rural settlements affected by migration in the years after the respective termination of rubber tapping. To complete the picture, more recent migratory trends were analyzed for the period 1992-1997. The year 1992 was taken as reference for two reasons. First, it was the last year of significant rubber production in northern Bolivia. Second, the national census conducted in 1992 yielded comprehensive data on the then population of rural settlements (INE 1992a, b; DHV 1993c).[487] Comparing population data of 1992 and 1997 helps elucidate migratory trends triggered by the conclusive halt of Bolivian rubber production. To allow for spatial variation, data were related to the average distance of each strata's settlements to the nearest town (Table 4-5).

[487] The previous census of 1976 does not permit comparisons as it includes data at aggregate level (INE 1976a, b).

Table 4-5 Demographic changes in rural settlements (n=163) in northern Bolivia in relation to their average distance to the nearest town, by settlement type.

	Population in 1997 as mean percentage of population in 1992 (%) (StDev)	Mean distance to the nearest town from settlements with in-migration (hours)	Mean distance to the nearest town from settlements with out-migration (hours)	Mean distance to the nearest town from settlements with stable populations (hours)
Barracas				
Enterprise-run *barracas*	35.0 (±53.7)	5.5	14.4	32.0
Large patron *barracas*	34.3 (± 50.2)	8.8	13.0	8.5
Small patron *barracas*	94.8 (±198.9)	4.0	12.4	11.7
Barracas in transition	96.4 (± 41.4)	9.9	6.0	7.8
Independent communities				
Peri-urban communities	206.2 (±182.0)	0.3	0.2	0.2
Agrarian communities	128.0 (±70.5)	0.3	0.7	0.5
Agro-extractive communities	157.5 (±132.5)	0.7	0.8	0.6
Extractive communities	124.1 (± 57.8)	2.5	3.2	3.4
Indigenous communities	114.9 (±36.2)	6.0	30.0	2.6
Rural sub-centers	223.2 (± 97.8)	2.7	n.a.	n.a.

Source: Village Survey 1997.

Notes: Relative increase or decrease in population in the period 1992-1997 was derived by comparing the number of families in 1997 derived from the Village Survey with the computed number of families in 1997, based on the data of INE (1992a, b). Computation took into account an internal growth rate of 3% per year. Settlements growing according to the internal growth rate from 1992 to 1997 would assume the value 100 (percent). Settlements affected by out-migration or in-migration assume values below or above 100, respectively. Mean distance to the nearest town denotes the net-travel time needed (for the exact definition, see note to Table 4-3). Standard deviation (StDev) in parentheses; n.a. = not applicable.

Between 1992 and 1997, out-migration adversely affected population growth in all types of *barracas* (Table 4-5). On average, the *barracas* lost 34.6% of their population due to out-migration. At the same time, all types of independent communities experienced in-migration, with their populations increasing by 47.5% adjusted to internal growth. Combining migration-related losses or gains of *barracas* and independent communities, the population of the 163 rural settlements surveyed grew by 10.7% from 1992 through 1997. These figures indicate that the rural exodus occurring in the wake of the latest rubber crisis culminated in the late 1980s before it leveled down in the early 1990s and even partially reverted in the mid-1990s.[488] Though the drain of population from the *barracas* continues unabated, many

[488] It is important to interpret census data cautiously. Given the regional population's high mobility and diverse patterns of residency, double recording is common. Male household heads residing on their own in rural areas for the major part of the year may be registered as 'rural household'. The number of household members may

outmigrants from the *barracas* today find their way to an independent community rather than migrating to town. These recent trends in rural-rural migration are, *inter alia,* expressed in declining growth rates of Riberalta's population toward the mid and late 1990s.

The negative balance of the *barracas* is most pronounced in enterprise-run *barracas* and large patron *barracas*, whereas small patron *barracas* and *barracas* in transition generally lost only a small fraction of their population. In the independent communities, comparatively less in-migration occurred in indigenous communities, followed by extractive, agrarian and agro-extractive communities. Rural sub-centers and peri-urban communities are characterized by the relatively highest percentage of in-migration in recent years, but it has to be stressed that there was considerable variation within the strata.

To analyze the diverse patterns of rural-rural and urban-rural migration, crucial factors like accessibility of goods and services, land tenure, and social relations need to be considered. Most of these factors are interrelated and, in one way or another, dependent on the distance to the nearest town. Within a given settlement type out-migration took place in the more remote settlements, whereas in-migration occurred in the settlements closer to town (Table 4-5). This trend holds particularly true of the *barracas* as well as those communities generally located farther from town, such as extractive and indigenous communities.[489] In addition to the distance from the nearest town, availability of schooling and health care appear to be crucial determinants underlying migration (Table 4-6).

well include his urban-based spouse and the children, who in turn may have been recorded as 'urban household'. Moreover, population data are politically biased, since governmental programs such as Popular Participation are granted on a per-capita basis.

[489] *Barracas* in transition divert from that pattern in that one out of the two that faced in-migration is located so far from the nearest urban center (16 hours) that the picture becomes distorted. In the 1980s, this *barraca* had a population of 120 rubber tapper families. By 1992, the number of permanent families had dropped to 15 after the halt of rubber production. Recent infrastructure investments stimulated in-migration so that its population rose again to 30 families in 1997. Though resource use continues to be controlled by the patron, an OTB was founded to tap funds of the Popular Participation Program. This example shows that even remote *barracas* can attract immigrants when they offer satisfactory facilities and participation in decision-making.

Table 4-6 Level of educational and health facilities available on *barracas*, *barracas* in transition, and in independent communities of northern Bolivia (n=163).

	Barracas (%)	*Barracas* in transition (%)	Independent communities (%)
Schools			
Nil	63.8	26.7	2.2
Primary school (*básico*)	36.2	46.7	57.8
Lower secondary school (*intermedio*)	0.0	26.7	27.8
Higher secondary school (*medio*)	0.0	0.0	12.2
Health care			
Nil	93.1	80.0	28.9
Basic health care	3.4	6.7	7.8
Good health care	3.4	13.3	63.3

Source: Village Survey 1997.

Note: Health care was defined as 'basic' when there was access to traditional and/or allopathic remedies provided by persons skilled in basic cures. These persons comprise local healers (*naturistas*) trained and financed by NGOs, itinerant doctors or nurses working on behalf of a municipality, local nurses or, in exceptional cases, a patron. 'Good health care' stands for a mini-hospital, a clinic, a health post or center available in a given settlement.

Independent communities are far better equipped with schools and health facilities than are *barracas* (Table 4-6). Secondary schools, for instance, are encountered in none of the *barracas* but in 40% of the independent communities. Likewise, access to health care is absent in more than 90% of the *barracas*, while 71% of the independent communities have access to basic, if not good, health care.[490] Compared to independent communities, *barracas* in transition have less or inferior facilities. However, in comparison with other *barracas* they are better equipped with primary and lower secondary schools and offer better health facilities. These findings and the related migratory patterns confirm the results of a village survey conducted in 1981, i.e. well before the rubber collapse: "People do move to get better services, particularly schools ... Patrons themselves note that conditions on the *barracas* are unacceptable ('*infra-humana*') and that *barraca* workers now require social services, such as education" (Romanoff 1992: 130). Educational and health services can therefore be regarded as crucial determinants of the migratory flows from the *barracas* to the independent communities or urban centers.

[490] Given the virtual absence of decent health care in the rural areas of northern Bolivia, 'basic' and 'good' health care should be understood as relative rather than absolute terms. There is evidence that knowledge about the use of medicinal plants is low to moderate (Stoian, in prep.; see also Table 5-6 in Section 5.3.1). To promote the knowledge on and application of medicinal plants, *Salud Sin Límites* (SSL), a local NGO supported by a UK-based NGO, offered training for local healers on traditional medicine. Working mainly in the Provinces of Vaca Diez and Madre de Dios, some 50 settlements were included in a network of SSL-supported health posts mostly based in independent communities. Following the program's termination in 1998, the existing institutional arrangements cast doubt on the persistence of the knowledge generated and the infrastructure created.

In contrast to what the literature suggests (see Section 5.1), land scarcity is no important determinant of rural-urban migration in northern Bolivia. On the contrary, it is rather the independent communities farther from town with readily available land reserves which experienced out-migration over the past. This confirms a general trend in the urbanization of the South, for "even when land is available in sufficient quantity and quality, the combined influence of rapid population growth and poor market infrastructure and supporting institutions conspires to push many from the land toward cities" (Kasarda and Crenshaw 1991: 475). It needs to be added, though, that despite the high growth rates mentioned above, population growth *per se* is irrelevant as a trigger of intra-regional migration.

Expansion and urbanization of the frontier

In Section 0 we have departed from the concept of frontier expansion and urbanization as put forward by Browder and Godfrey (1997: 85-6). They stress five criteria that define the term 'frontier' in practice, viz. its demographic, political, economic, social, and cultural aspect. In addition, each frontier has a temporal dimension, i.e. it 'closes' once it is fully incorporated into the national space economy. These criteria shall be applied to the case of northern Bolivia.

A **demographic frontier** exists at two distinct levels: first, in the rural sub-centers, that is in the zone of contact between the *barraca* and the *campesino* sectors; and second, in the urban centers. In both cases high population growth is due to in-migration from the hinterland. In the region as a whole, the population has been growing according to the internal growth rate[491], suggesting insignificant extra-regional in-migration.[492] Thus, population movements chiefly reflect intra-regional migration, or internal migration *sensu* Lee (1966: 48-9). In contrast, migrants from regions other than northern Bolivia are rather pulled towards the colonization areas assigned by the government, viz. the Alto Beni region (La Paz Department) and parts of the Santa Cruz Department. In northern Bolivia, frontier development relies greatly on private endeavor, even though no major colonization efforts have been initiated by the private sector since the great rubber boom.

As both Cobija and Guayaramerín lack the industrial base that Riberalta has built up since the 1960s, it does not come as a surprise that the latter experienced the major thrust of rural-urban migration in the wake of the latest rubber crisis. Being the capital of Pando, Cobija could rely on the national and departmental budget for its small-scale development (cf. Letellier 1964: 41). In addition, it benefits from the status as a free trade zone, boosting the economic exchange with Brazil though always in dependence of the exchange rate. Similarly, Guayaramerín gains through its location at the Brazilian border, as its economic basis rests to a large extent in all kinds of goods traded with Guajará-Mirim, its Brazilian counterpart at the opposite bank of the Mamoré River. In contrast, Riberalta, enjoying the status of a mere provincial capital, had to rely on its own forces or, more precisely, on the forest resources provided by its vast hinterland. The region's three urban centers base their economies on

[491] Internal growth is the balance between births (fertility, natality) and deaths (mortality). It is often referred to as 'natural' growth or increase (e.g., Kasarda and Crenshaw 1991: 474), but this is an unfortunate choice of label as it suggests that population growth due to in-migration is something less 'natural'.

[492] Hypothetically, despite major in-migration a region's population can still grow according to the internal growth rate, provided that there is a counterstream of the internal population towards places outside the region (cf. Lee 1966: 54-6). In northern Bolivia, though, migrants bound for regions other than that of origin are few in number.

different assets, thereby providing different incentives to potential migrants.[493] In this sense, frontier urbanization is rather disarticulated despite the seemingly common setting.

The **economic frontier** in northern Bolivia entails various commodity fronts. The Peruvian bark front embraced a relatively small portion of the region, namely the Beni plains down to Reyes. Only the subsequent rubber front opened up the region as a whole, leading to a closure of the rubber frontier by the early 20th century. But as stressed earlier, the process from opening to closure was not linear. On the contrary, it occurred in certain waves, triggered by the ups and downs of international rubber prices. The rubber front expanded in times of high rubber prices but contracted as these plummeted. As a consequence, alternate commodity fronts were opened up, manifested in the emergence of a Brazil nut front by the late 1920s. The organizational mode of rubber and Brazil nut exploitation was virtually identical, since either the *barraqueros* or independent *campesinos* combined their extraction on the same plot. Not only where these products complementary but also the associated fronts. This changed only recently with the downturn of rubber production. The Brazil nut economy alone could not maintain the regional economy, as the related front had already been short of its 'closure'. As a result, new commodity fronts had to be opened up, explaining the recent advance of the timber and palm heart fronts, as shown in Sections 3.4 and 3.5.

The **social frontier** is – similar to the demographic frontier – dichotomous in nature. Browder and Godfrey (1997: 70) suggest a continuum from populist frontiers to corporatist frontiers: populist frontiers encompass "areas characterized by colonization by small farmers, independent miners, petty merchants, and others engaged in various forms of labor-intensive activity"; in contrast, "in the corporatist-driven fronts, spatial organization is dominated by capitalized enterprises, both in public and private hands, pursuing such activities as corporate cattle ranching, agribusiness, large-scale resource extraction and mining, and hydroelectric projects." Applying this distinction to northern Bolivia, we can detect a corporatist *barraca* frontier and a populist *campesino* frontier. The former is a purely extractive frontier, reaching to the remotest zones far upriver. In contrast, the populist *campesino* frontier constitutes in fact a small farmers' agro-extractive frontier, occupying the areas along the roads and/or in the vicinity of town.

The **cultural frontier** becomes manifest between the non-tribal or mestizo peasantry in the vicinity of town and the indigenous communities further upriver. Whether voluntarily or not, the region's traditional inhabitants seem to have found a zone between the competing *barraca* and *campesino* sectors in which they can maintain whatever has been left of their 'traditional' life styles after their often forceful incorporation into the rubber economy. The cultural frontier, however, is not so pronounced that exchange with non-tribal or mestizo populations was impeded. Recently, some indigenous groups have been seeking unification beyond the boundaries of their own ethnic group. Along the Beni river, for instance, *Cavineño*, *Esse Ejja* and *Tacana* created a network that together with non-tribal communities pleads for two multi-ethnic territories of more than 500,000 hectares each. By mid-2000, these claims were pending as they had been awarded a 'freeze status' (*Resolución de Inmovilización*) (cf. CPTI-CIDOB 1997).[494] For the time being, this legal status cements the *status quo* or, say, the *de*

[493] Cobija, for example, has been the main destination of *kolla* merchants from the Bolivian highlands, while Guayaramerín attracted a high number of settlers from Beni's savanna region (cf. INE 1992a, b).

[494] Article 18 of the Forest Act defines 'immutable land' (*Tierras de Inmovilización*) the following way: "The only activities permitted during the state of immutability are those of protection, as well as those of forest production initiated prior to the declaration, whenever they comply with the respective management plan approved and whenever they fulfill the norms of the transitory rules and regulations of the latter law. In no case

facto rights of the *barraca* owners. But compared to even more vague classifications stipulated under the new law the 'freeze status' may well provide a basis for the legal hand-over of significant tracts of land from the patrons to indigenous groups. This might even strengthen the cultural frontier, but at the same time constitutes an indispensable step toward a more equal distribution of land entitlements in the region.

From a **temporal perspective**, the multi-faceted frontier in northern Bolivia shows signs of 'closure', since the national space economy includes, albeit to varying degrees, the entire rural area.[495] The point in time of such a closure is difficult to determine as this ultimately depends on the definition beyond which level we perceive an area as fully integrated into the national economy. For many decades, the thesis of a 'dual economy' has dominated our perception of a schism between the 'capitalist sector' and the 'subsistence sector' (see Morse 1974: 430) or, in our case, the *barraca* sector and the *campesino* sector. "All relations between the two were reduced to the provision by the backward sector of an unlimited supply of labour to the advanced sector. ... this model underestimates the degree of commercialization which is possible in rural areas, as well as the degree of accumulation in peasant enterprises" (Laclau 1971: 23). Obviously, the dualist thesis represents an oversimplification of the various inter-relations between the two sectors and, in the case of northern Bolivia, there is virtually no rural household that is not connected, in this way or another, to national or international markets (Stoian, in prep.). In this sense, the frontier in northern Bolivia is 'closed'. However, the concept of 'opening' and 'closure' of a frontier seems too linear to adequately address the often cyclical manifestations of frontier development. Instead we should seek to refine the concept by allowing for both frontier expansion and contraction, in particular as regards commodity fronts. Since these typically overlap across time and space, as we have seen in Chapters 2 and 3, a clear-cut picture may hardly arise. As for the livelihood strategies of those who settle and work the frontier, linear developments are hardly at play. The central topic of this thesis – spatial variations *and* temporal dynamics – also applies to the frontier. It effectively defies a simple classification in terms of its spatial occupation and temporal persistence. Nonetheless, the frontier concept helps elucidate the manifold interrelations between a regional extractive economy, the national space economy, and the international market.

Settlement trajectories in a frontier setting

During the 1980s and 1990s, a remarkable differentiation of rural settlements has taken place in the northern Bolivian Amazon. This process was stimulated by a series of causes, most prominent of which was the decline of rubber production. The demise of Bolivia's rubber industry had a twofold effect. First, the once numerous populations of the *barracas* left for the

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the activities shall interfere with the studies of classification" (BOLFOR 1997: 21). As far as the transitory dispositions are concerned, the new Agrarian Reform Law (*Ley INRA*) states: "In relation to the sixteen (16) applications on Traditional Communal Lands (*Tierras Comunitarias de Origen*), submitted prior to this law, their immutability concerning new applications and establishments is disposed, respecting rights acquired by third parties" (República de Bolivia 1996b: 95). It is precisely the last sentence that implies potential conflicts between old-established *de facto* landowners, such as the patrons, and the 'traditional' landowners represented by indigenous groups. By mid-1998, no short-term solution was in sight despite the lip service of enterprises and patrons to acknowledge the legitimate land claims of indigenous groups. What remains under discussion is the minimum area these groups need to preserve their life styles. Obviously, the semi-nomadic character of most of the region's indigenous peoples requires rather large territories to ensure the survival of societies that continue to extensively rely on hunting, fishing, and forest product extraction.

[495]

independent communities or urban centers. Second, the breakdown of the agro-extractive cycle, which provided a mode of living in both *barracas* and independent communities for half of the century, called for major modifications of rural livelihood strategies.

The region's rural population had to prove its adaptive capabilities more than once during the 20th century. In the light of poor soils, isolation, barely developed infrastructure, disproportionate access to land, political neglect, and a chronic shortage of capital, opportunities for adaptations seemed bleak. Yet rural dwellers adapted admirably to the latest rubber crisis by adjusting the trade-offs between agriculture, extractivism, and wage labor (Stoian, in prep.). Elsewhere in Amazonia, it had also been observed that "subsistence and commercial agriculture, in particular, become more important in inter-boom periods, and households must trade off and balance participation in extraction against agriculture, wage labor or other remunerative activities" (Coomes and Barham 1997: 182).

Adaptive responses to the latest rubber crisis are neither unique to northern Bolivia nor unprecedented within the region. The first rubber crisis between the World Wars had already provided the background for the emergence of independent communities. These were expanded in the wake of the second rubber crisis, in response to which "rubber tappers ... take over the *barraca* founding a new community, or migrate in search of communities already existing, if not to urban areas of the region" (Ormachea and Fernández 1989: 49; my trans.). Similar adaptations were observed in the Peruvian Amazon near Iquitos where "the demise of rubber brought to the Tahuayo basin substantial changes in patterns of settlement, labor relations, and estate activities" (Coomes 1995: 112). Adaptations were not only required from rural households. In the urban areas of northern Bolivia, the private sector made considerable effort to add value to the principal forest products, i.e., Brazil nuts, palm hearts, and timber. Despite notable achievements in this respect, the secondary and tertiary sectors remain poorly developed and, seemingly, social inequity still characterizes most of the production systems. But what at a first glance appears to be a highly persistent system of unequal exchange underwent substantial modifications in recent years.

The *barracas*, for instance, evolved under a system of debt peonage binding the rubber tapper's fate inescapably to that of his patron. This 'patron system', in the terms of Romanoff (1992: 122), could persist as long as rubber production was viable and insecurity of food supplies constituted a major problem. But the final collapse of Bolivian rubber trade also brought about the disintegration of the patron system.[496] Massive out-migration from the rubber estates was a concomitant of the rubber decline.[497] Emigrants could opt for an independent rural community or one of the three urban centers. The city-bound among them tend to settle in peripheral neighborhoods where they frequently lack access to agricultural land and, consequently, have to support themselves by means of wage labor (see Chapter 5). In contrast, livelihoods of those who migrated to independent communities are mainly based on a combination of agriculture and extractivism and, in part, wage labor (Stoian, in prep.).

[496] The disintegration of the patron system was foreseen by Romanoff (1992: 130), though without explicitly referring to the imminent decline of Bolivian rubber production: "The system no longer exists when there is product diversification, more transportation facilities, and increased local food production. As highways extend farther from Riberalta, the *campesino* area is likely to expand."

[497] Out-migration from the *barracas* was not confined to dependent extractivists. Saucedo and Lazo (1996: 60), representing the *barraca* owners on behalf of the Association of Rubber and Brazil Nut Producers (ASPROGOAL), stated that "like the Brazil nut collectors, we are forced to emigrate from the countryside to the cities. There are many *barracas* that we now have only with caretakers. We go to the *barraca* only in times of Brazil nut extraction."

The few families determined to stay on the *barracas* no longer face restrictions on subsistence agriculture and, albeit not in all cases, are self-sufficient in food production like their counterparts in independent communities.[498] On the other hand, they continue to be dependent on itinerant traders and patrons for the supply of basic goods, such as sugar, oil, salt, kerosene, etc. Moreover, time dedicated to agriculture conflicts with works to be carried out for the patron on those *barracas* where dependents continue to be employed as daily laborers during the off-season.

Apart from changes in rural and peri-urban livelihood strategies, the *barraca* economy in general and patron-type labor relations in particular altered notably in the wake of the latest rubber crisis. The oppressed rubber tapper of former years, trying in vain to escape the vicious circle of food insecurity and debt, virtually no longer exists. Nowadays, the vast majority of the temporary labor force needed on the *barracas* during the Brazil nut season is recruited from urban centers and, to a lesser extent, from independent communities. Close ties between patrons and their dependents, prevailing for almost a century, thus gave way to a more complex web of socio-economic relations. A key role in this process was assumed by contractors (*contratistas*) who emerged as a link between the patrons and enterprises on the one hand, and the recruited Brazil nut gatherers (*zafreros*) on the other. They are responsible for the procurement of both raw material and labor. For this purpose, they are supplied with an advance (*habilito*) by patrons or enterprises, part of which they use to advance (*habilitar*) the *zafreros* but also to purchase the foodstuffs needed in those places where no *barraca* grocery is within reach. Relations between the contractors and the *zafreros* are based on mutual trust, often involving kinship or family ties. Nevertheless, it is by no means uncommon that *zafreros* abscond before having fulfilled their obligation, not to mention that some do not show up at all. Unlike former years when dependents could not leave a *barraca* without having worked off their debts (Coesmans and Medina 1997: 29), many collectors escape their accumulated debts by joining another patron or contractor the following year. The *zafreros*, in turn, run the risk of being cheated by unscrupulous contractors who may not pay for all the Brazil nuts collected, or not even parts thereof.

The general status of the *zafreros* has been strengthened by rising competition for raw material and labor in view of the expanding market for Brazil nut. Opportunities not only to avoid debts but to generate income through extractivism have increased over the years. The ongoing process of converting *barracas* into independent communities enables extractivists to sell their products independent of a patron at the price of the free market. In addition, there was a nominal but steady increase of prices paid for raw Brazil nuts and palm hearts during most of the 1990s. Enhanced transportation facilities and the expanding road network further undermined the strong grip exerted by patrons in times of more pronounced isolation. As a result, there is a gradual shift from a 'patron system', in which all social and economic relations are centered around the patron, to a '*barraca* system' characterized by less exploitative labor relations.

[498] Not all rural households manage to be self-sufficient in food production. Sicknesses, adverse weather conditions, and diversion of labor force during the Brazil nut season may prevent rural dwellers from producing sufficient food for the entire year. In addition, urgent need for cash may force them to sell part of their production just after the harvest when supplies are high and prices are low. When they run out of own supplies at the end of the year they have to buy staples at the much higher off-season rates.

The modern '*barraca* system'[499] implies the reduction of a *barraca* to a mere source of raw material, the procurement of which relies on the recruitment of a temporary labor force. This holds especially true of large patron *barracas* and enterprise-run *barracas*. The maintenance and management of these *barracas* require a substantial transfer of capital and labor. Unlike former years when monetary transactions between patrons and dependents were of marginal importance, they now play a key role for the acquisition of labor. Without advance payments, for instance, hardly any gatherer can be motivated to seasonally migrate to a *barraca*. The amount of cash paid as an advance increased from about US$100 in 1995 to US$ 200-300 in 1998 due to higher competition for the labor force and successful campaigning of labor unions.[500] Efforts to bypass existing trading and contracting networks to attain a higher income for the collectors often fail to acknowledge the importance of such advances. "Although such efforts are a worthy experiment, they will not necessarily ensure prosperity for extractivists, particularly if market prices for their products are low, and significant management problems arise. For all its faults, the *aviamento* system has long provided credit and goods to people who would otherwise be cut off from such assistance" (Smith et al. 1995: 79-80).[501]

Another feature favoring the persistence of the *barraca* system in the more remote pockets of northern Bolivia is the difficulty of access. Vast areas rich in Brazil nuts, palm hearts, and timber are located in isolated parts of the region virtually devoid of a permanent population. Extraction of forest products from these far-off places inflicts high operating and transaction costs preventing most of the would-be extractors from this undertaking. These costs further increase with enforcement of the new Forest Act which obliges all those desiring to extract timber from government-owned areas (*Tierras Fiscales*) to pay an annual concession fee of the equivalent of US$1 per hectare;[502] if only NTFPs are to be extracted, the annual fee drops to US$0.3 per hectare (BOLFOR 1997: 36). Given the isolated context of those settlements and their poorly developed infrastructure, it can be expected that only well-off entrepreneurs will apply for these concessions. It is them who can invest in the *barraca* infrastructure and pay the concession fees stipulated by the new Forest Act, rather than the aged possessors of large patron *barracas*, many of whom failed to adequately respond to the latest rubber crisis. Similar to the enterprises, most of the patrons do not possess legal land titles. Consequently,

[499] The *barraca* system as defined here differs from that of Pacheco (1992: 125) in that the former chiefly refers to a *barraca* as a production unit, whereas the latter is characterized by a high interdependence between the different types of *barracas* due to a complex flow of capital between Brazilian merchants and large or small patrons. In the 1990s, the dominant role of Brazilian capital in the *barraca* economy has ceased with the collapse of Bolivian rubber trade. The emergence of the Brazil nut industry which mainly relies on Bolivian capital further undermined the importance of capital infusion from Brazil. The increased financial autonomy of Bolivia's extractive economy was also necessitated by adjustments of Brazil's monetary and fiscal policy.

[500] The amount of an advance paid to a *zafrero* depends on several factors, most important of which are acquaintance, reliability, and the amount of Brazil nuts delivered the year before. Advances paid in the season 1997/98 mainly hovered around US$200-300, but could be as low as US$100 or as high as US$ 400. The timing of payment also plays a significant role. Advances are due in December at the onset of the Brazil nut season, just at a time when all families urgently need cash for Christmas expenditures. The social importance of new clothes, decent food, and alcoholic drinks provided during those days is so high that many household heads sign up with the first contractor in order to secure some cash.

[501] The preliminary outcome of a project of the World Wide Fund for Nature (WWF) aimed at supporting rubber tappers in an extractive reserve in Rondônia provides evidence for these critical remarks: "Where results are already visible, namely in the establishment of alternative marketing networks, significant management problems have arisen and as a consequence, objectives have not been met" (Brown and Rosendo 2000: 223).

[502] After successful campaigning of the timber industry, the fee has been reduced in spring 2000 to US$0.8 per hectare for enterprises that are either certified with an internationally recognized label or supply logs to local wood manufacturers (CFB 2000e: 1).

most of the land in question will be assigned to the state forest area which is liable to a forest concession system.[503] It is anticipated that enterprise-run *barracas* converted into forest concessions will increase at the expense of large patron *barracas* along with a general process of concentration within the Brazil nut industry. These new *barracas* may stimulate permanent residency through infrastructure investments and year-round income opportunities.

Enterprise-run *barracas* in their present form are a rather recent phenomenon. Many of them are owned by the processing plants for Brazil nuts. Between 1986 and 1997, twenty such *beneficiadoras* were erected in Riberalta alone (Coesmans and Medina 1997: 150, Justiniano 1998). In the early 1990s, owners of the large processing plants purchased *barracas* to consolidate their positions in the market through vertical integration (Assies 1997: 51-2). More importantly, they sought to horizontally integrate their enterprises by engaging into palm heart and timber operations, if not in gold exploitation. This move has been spearheaded by Santa Cruz- and La Paz-based companies who control a significant portion of enterprise-run *barracas*. They reinvest part of the profits accruing from the involvement in agribusiness, construction works, and the timber industry elsewhere in the country. Though their mainstay remains outside the region, these enterprises expand their forest-based operations to northern Bolivia, as stocks of valuable timber species are being depleted in the southern Bolivian Amazon, and as the expanding markets for Brazil nut and palm heart offer new business opportunities.

Small patron *barracas* also have a certain future provided that the mainly family-owned units do not suffer from emigration of the younger generation. To get proper land titles, residents of these *barracas* would need to be registered as locally organized social groups [*Agrupaciones Sociales del Lugar* (ASL)].[504] Thus, they would be entitled to technical assistance by the Municipal Forestry Unit for the management of the territory they have traditionally worked. If additionally converted into independent communities (*comunidades campesinas*), small patron *barracas* or *barracas* in transition would also gain access to the funds provided by the Popular Participation Program. Other governmental assistance, such as the supply of school teachers, could also be approached as some small patron *barracas* and many *barracas* in transition fulfill the minimum requirement of ten pupils. Thus, these *barracas* may evolve as focal points of an expanded school network reaching to more remote pockets of the region. A higher level of education on those *barracas* is anticipated to further boost their conversion into independent communities.

[503] In 1998, the discussion on land titles has flared up in northern Bolivia. As virtually none of the patrons and enterprises can prove unimpeachable land ownership, most of the *barraca* area has to be regarded as state property. According to the Forest Act, this area is due to a public auction of forest concessions. However, many patrons and entrepreneurs argue that this would unduly deprive them of the *barraca* facilities they have invested in. For this reason, they claim a prerogative with the award of forest concessions, such that 'traditional' *barraca* owners can further benefit from their infrastructure investments. In 1999, the Bolivian government largely followed this proposal and granted certain privileges to those desirous of converting their *barraca* into a forest concession.

[504] Article 31 of the new Forest Act grants forest concessions with priority to the traditional users of NTFPs who need to be registered as ASL (see BOLFOR 1997: 32-3). According to Article 1 of the *Reglamento de La Ley 1700, Decreto Supremo N° 24453* dated 21 December 1996, ASL have to meet the following requirements: (1) proven use of the area for no less than five years, (2) effective residency of all its members in the respective municipality, and (3) a minimum of 20 members (República de Bolivia 1996a: 10). By the end of 1999, 13 forest concessions of ASL, embracing 602,637 ha, had been approved in the whole of Bolivia (Superintendencia Forestal 2000: 6).

Notwithstanding the likely persistence of certain *barraca* types, the *barraca* system as such will be pushed further upstream into zones of low population density.[505] In contrast, areas closer to town will be exclusively covered by independent communities. As early as 1981, Romanoff (1992: 123) found in his village-level survey that "specialized rubber tapping settlements (called *barracas* in Spanish ...) and the patron system predominate in areas that are remote from urban places and highways, but where limited regular entry by river is possible. In areas accessible to a city or by road, activities like commercial food production or timber cutting become feasible, peasants have their choice of alternative buyers and sellers, specialization declines, and the patron system weakens and disappears."

Road construction along with the repercussions of the latest rubber crisis undermined the patrons' control of large tracts of the forest. But the increasing importance of the independent *campesino* sector had started well before with the disintegration of the House of Suárez in the post-war period and the second rubber crisis then affecting the *barraca* economy. The withdrawal of international capital in that period[506] was an indicator that foreign investors – typical allies of export-oriented *latifundium* production (Dos Santos 1996: 155) – placed little hope in a recovery of the pre-war *barraca* system which had ensured decent profits for almost half a century. Ironically, it was the two post-war rubber crises rather than the 1953 land reform or its 1996 modification[507] that have notably changed the patterns of land distribution and access to forest resources in the less remote parts of northern Bolivia. Only the far-off places which are just accessible by river constitute a resort for the continued existence of the *barracas.*

Remoteness, though, is not the only factor determining the persistence of the *barraca* system. Historical analysis suggests that each rubber crisis resulted in an increase of independent communities at the expense of the *barracas* (cf. CEDLA 1986). In search of the factors underlying this conversion we have to ask what explains the success of the independent communities and the failure of the *barracas*. The answer appears rather simple: extractivism as such cannot sustain a family. To be successful in the mid and long run, rural livelihood systems have to be shaped around agriculture. The patrons' omission to duly acknowledge the role of subsistence agriculture remained without severe repercussions on the *barracas* as long as rubber production was viable. The rubber-based income enabled them to invest in foodstuffs and basic supplies they advanced to the tappers. However, the system that once reinforced the tappers' dependency could no longer be maintained when rubber declined. Unable to provide their dependents with the supplies needed, patrons had to relax restrictions on agriculture or to abandon their *barracas*. The resulting increase in subsistence agriculture helped to overcome food insecurity on the *barracas,* thereby depriving the patron system of one of its main pillars.

Food insecurity ceased to be a central issue on the *barracas* given the loss of most of their permanent residents. Today, the *barraca* economy relies on a temporary labor force irrespective of the forest products to be extracted. The temporary character of the labor

[505] Pure *barraca* rivers, that is rivers where independent communities are absent, are tributaries of the Beni and Madre de Dios rivers, such as the Manupare, Manurimi, Manuripi and Tahuamanu rivers. The latter two are almost entirely occupied by large and small private *barracas* (Blacutt, pers. comm.). In addition to these *barraca* types, the Manupare and Manurimi rivers harbor some enterprise-run *barracas*. The permanent population along the entire Manupare river, for instance, did not exceed 150 families in 1997.

[506] Pacheco talk s of "progressive detachment of external capital" (1992: 222).

[507] The *Ley del Servicio Nacional de Reforma Agraria - INRA* was passed as *Ley N° 1715* on 18 October 1996 (see BOLFOR 1997).

relations no longer permits patrons or enterprises to establish dependency relations, though they still need to provide the extractors with foodstuffs during the time of employment. Maximum prices to be charged for basic necessities are stipulated by the Labor Inspectorate along with minimum prices to be paid for the nuts delivered. This mode ensures that on many *barracas* the foodstuffs provided by patrons are no longer the basis for additional profits but simply means to maintain the production process.

In independent communities, food security is the underlying principle of livelihood systems. Agricultural production, though, is not only orientated to meet subsistence needs, but is increasingly geared to urban markets. The growing importance of commercial agriculture results from the need to compensate for the loss of rubber-based income, an observation also made in the adjacent Brazilian Amazon (Browder 1992a: 176). Along with higher accessibility of urban markets through road construction and improved transportation facilities, the average area cultivated per family increased over the years in communities close to town (see Chapter 3). The degree of commercialization varies with the distance from town, the availability of natural resources, and access to land, markets and services. These factors in turn determine the variability of livelihood strategies. Today, rubber tappers/extractivists with no other source of support no longer exist. Those among them who migrated to independent communities adopted livelihood systems ranging from extraction-based subsistence agriculture to market-oriented agriculture coupled with various degrees of wage labor.

Indigenous communities diverge in various ways from the general pattern described above. Those indigenous groups who physically and culturally survived the year-long oppression imposed by the early rubber economy often returned to what used to be their traditional way of living.[508] Generally, indigenous communities display low market integration and the importance of hunting and fishing often outweighs that of forest product extraction or agriculture. The latter is predominantly of subsistence type, focusing on the cultivation of manioc, plantains, sweet potatoes, maize and, if grown at all, rice. Many of these communities strive to obtain land titles with support from non-governmental organizations. In total, indigenous groups applied for 1.6 million hectares of land in the northern Bolivian Amazon (cf. CPTI-CIDOB 1997). This area is equivalent to the present-day extent of logging concessions in the region. Even if less than the area applied for was granted, considerable changes of land tenure are likely. The anticipated impact of land redistribution is twofold. First, indigenous communities may become the driving force challenging the *barraca* system from inside, for they are the only type of independent community existing in remote areas otherwise occupied by *barracas*. Second, the remote location of indigenous settlements along with their enhanced legal status may prove the *conditio sine qua non* for the survival of their social and cultural life forms.

While indigenous communities may become agents of change in more distant areas, rural sub-centers will play a vital role with respect to developments closer to town. As emphasized earlier, rural sub-centers display the highest demographic dynamism, attracting an increasing number of people from the rural hinterland. These centers can be regarded as buffer areas absorbing at least part of the rural-urban migratory flow. Funds from the Popular Participation

[508] There are, however, marked differences between the region's eight indigenous peoples. The largest among them, namely *Tacana* and *Cavineño*, nowadays share important features with non-indigenous communities (Camp and Liccardi 1979, Ottaviano and Ottaviano 1979). Smaller ethnic groups, like *Esse Ejja*, *Chácobo*, *Yaminahua*/*Machineri*, *Araona* and *Pacahuara* have long tried to avoid close contact with non-indigenous groups, thus preserving or retrieving as much of their traditional life styles as possible (cf. Diez and Riester 1996: 59ff).

and the Municipalities' share of royalties derived from forest use will contribute to further enhance the infrastructure of these settlements. Infrastructure development in turn will speed up in-migration. It is obvious that a good part of out-migration from rural areas was fueled by lacking access to basic goods and services. It remains to be seen whether or not rural sub-centers can partly take over the present role of urban centers rather than serving as an intermediate stop on the way to Riberalta, Cobija, or Guayaramerín (see also Chapter 5).[509]

Some line agencies and extensionists argue that rural-urban migration is a negative process to be arrested. One could ask, however, why people should stay in remote areas where they are deprived of even basic services? Doubtlessly, urban areas offer better opportunities for jobs, schooling, and health care, thereby exerting a sponge effect that has curbed even more extensive deforestation in the Amazon (Smith *et al.* 1995: 50). This is confirmed by a case study from Ecuador where rural-urban migration also reduced deforestation – especially in the frontier regions – notwithstanding the 'ecological footprint' growing urban areas may leave on close-by forests (Wunder 1997: 26). In the northern Bolivian Amazon, this is truly the case as over the past decade deforestation has increased in the proximity of the three principal towns. The influx of rural dwellers required the expansion of homestead areas, arable land, and pastures. On the other hand, considerable areas in the forest were left fallow by the emigrants. These areas currently regenerating have to be accounted for when establishing the balance between deforestation and reforestation.

Three lessons can be learned for NTFP-based development when analyzing the rapid evolution of rural sub-centers and the general dynamics of rural areas. First, irrespective of their economic viability and their ecological soundness, extraction-based livelihoods are only socially acceptable when basic goods and services are accessible. Without adequate roads and transportation, access to education and health care, and, in the mid and long run, availability of electricity, rural settlements in northern Bolivia are doomed to lose their permanent population. Road construction, often blamed for being a catalyst for tropical deforestation, proved to be crucial as regards the conversion of *barracas* into independent communities and, consequently, a process within which extractivists capture increasing shares of NTFP benefits.

Second, given that rural services are largely prohibitive in the region's most remote pockets and that neither the government nor the private sector can be expected to bear the necessary investments, there is no viable alternative to the forest concession system as provided for in the new forest and land legislation. Utilization of these remote areas will continue to rely on a temporarily recruited labor force. To better the lot of those seasonally working on the *barracas* or forest concessions, in particular as regards their precarious health situation, new institutional arrangements are to be sought for. Bolivia's Voluntary Forest Certification initiative may work towards this end by establishing guidelines and criteria for best governance in terms of services and facilities to be provided to the casual laborers on the *barracas* and concession areas (see CBCFV 1999).

[509] Based on evidence from Southeast Asia and sub-Saharan Africa, Hinderink and Titus (1988: 412) conclude that "most important impulses for the development and transformation of the rural periphery come directly from the high-order centres or are determined by central governments and world market mechanisms. ... The result is that local or regional service centres are often completely by-passed." It appears that such general statements are of limited applicability to regions like northern Bolivia which are only partly integrated into the national space economy and hence disarticulated from political decision-making.

Finally, the region's indigenous peoples have long been deprived of the benefits accruing from NTFP trade. But both the new Forest Act and the revised Agrarian Reform Law provide the legal basis for their active participation as autonomous land users. Their present spatial distribution between the remote forest concessions and the non-indigenous or mestizo peasantry close to town – though constituting a cultural frontier – may well be a viable basis for their economic and cultural survival, provided that they are granted the land titles needed. Evidently, indigenous communities face the same need for improved rural services and facilities as their non-indigenous counterparts.

5

PERI-URBAN LIVELIHOODS: RURAL TIES OF AN URBAN LIVING

... the imagination boggles to think of the immense distances of tropical, fever-laden jungle which the feeble stream below—now but a trickle of water over the stones of the deeply-cut bed, at times swollen into a swift torrent threatening roads and bridges—must traverse on its long journey to the Amazon and the Atlantic. The Beni itself flows to the north-east through densely jungled country and is united at Riberalta with the Madre de Dios ... These two rivers diverging through high jungle, with the small wooden island at the point of confluence, are a sight of surpassing beauty and there can be few towns at once so finely and so inaccessibly situated as Riberalta ...

Harold Osborne
Bolivia: A Land Divided, 1955

Theoretical framework and research questions

Advocates of development strategies based on the utilization, processing, and marketing of non-timber forest products implicitly target forest-dwelling people as the main beneficiaries. Amazonia's population, however, has been predominantly urban since at least 1980 (Browder and Godfrey 1997: 1). Similarly, many firms and intermediaries involved in NTFP trade are urban-based so that a good deal of the value added to NTFPs accrues to urban Amazonia. This general picture holds especially true of the northern Bolivian Amazon, with the Riberalta-based Brazil nut industry as the single largest employer of unskilled labor. Both the shelling process and the procurement of raw material entail urban labor, for most of the *quebradoras*[510] and about half the Brazil nut gatherers are recruited from (peri-)urban areas. More than 80% of the benefits derived from the trade in Brazil nut are retained in Riberalta and other urban centers (see Section 3.8). In addition to the Brazil nut industry, the timber and palm heart industries rely in part on labor from the periphery of Riberalta. This chapter focuses on the involvement of its peri-urban population in the forest-based industry which will be analyzed within the broader context of frontier urbanization and relating shifts in occupational patterns due to rural-urban migration.

The framework of frontier urbanization as put forward by Browder and Godfrey (1997) has been introduced in Section 4.1. We have seen that a rigid rural-urban dichotomy becomes blurred when uncovering the manifold linkages between rural and urban areas. While Chapter 4 focused on frontier expansion and urban growth with rural settlements as the unit of analysis, this chapter will adopt an urban household perspective to elucidate features of

[510] *Quebradoras* remove the seed coat of Brazil nuts by means of hand-operated machines. This female work force dominates the manual shelling process in the local processing plants, though children and an increasing number of male family members (*quebradores*) assist in this process (cf. Coesmans and Medina 1997).

frontier urbanization and rural-urban links at the micro level. As for the Rural Household Survey (Stoian, in prep.), I shall draw on the concept of household as an analytical tool for the following reasons:

> "The household as a unit of analysis has achieved wide currency in social science circles in recent years. Researchers have shown that in many contexts, both rural and urban, the household is the locus of important productive processes. It has also been demonstrated to be the context within which many decisions related to productive strategies are made and where income is pooled and then allocated" (Collins 1986: 651).

Putting emphasis on the nuclear-family household does not imply that extra-household relations within larger networks of kin and community are of minor importance.[511] These are touched upon wherever required, as for example in the case of remittances. But it is typically the household where decisions on production, exchange and consumption are made, with its component members engaging in economic activities as part of the overall budgeting and allocation of household resources (Orlove and Custred 1980: 33). Moreover, in the context of frontier urbanization rural-urban migration plays a key role, and since it is the household rather than the whole kin who migrates, the former was chosen as a unit of analysis. Drawing on some of the aspects dealt with in Chapter 4, we shall relate the conceptualization of 'urbanization' again to that of migration, although here with a predominantly urban focus.

Two principal hypotheses are advanced in the literature that seek to explain **rapid city growth and urbanization**: (1) adverse rural conditions spur rural-urban migration, as rapid rural population growth pushes landless labor in the cities in view of limited farm land – the process of so-called agricultural involution[512]; and (2) economic forces pull migrants into the cities, above all wage differentials between the rural and urban areas (Firebaugh 1979: 199, Williamson 1988: 426, Gilbert and Gugler 1992: 67, Jepma 1995: 190).[513] Both premises draw on the push-pull hypothesis, suggesting that imbalances between regions 'push' people out of a disadvantaged environment and 'pull' them to an area that appears more favorable (Thomas 1941). Migration thus involves a sequence of changes of individuals, first through a 'push' into potential outmigrants, then by means of a 'pull' into actual immigrants (Leloup 1996: 103). Likewise, Bogue (1963) considers the 'push' and 'pull' attributes of the places of origin and destination as independent variables of migration:

> "Migration that has a very strong 'push' stimulus tends to be much less selective, with respect to the community of origin than migration which has a very strong 'pull' stimulus. Where there is a condition of very strong 'push' but no strong 'pull' (extreme cases are disasters such as famine drought, floods, exhaustion of a resource), origin selectivity is at a minimum. In other words, selectivity of out-migrants from any community tends to vary directly with the strength of attractive 'pulls' from other communities and inversely with expulsive 'pushes' from the community itself" (cited in Jansen 1970: 13).

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[511] It needs to be stressed that the household is not the most appropriate unit of analysis in any given context. Collins (1986: 653), for example, argues that in some parts of the Andes the household is a subminimal unit, incapable of fully reproducing labor power within its boundaries; under these circumstances extra-household relationships are central to ensure household maintenance and reproduction.

[512] The importance of this process for the case of northern Bolivia is discussed in more detail by Stoian (in prep.).

[513] Kasarda and Crenshaw (1991: 474) point out that rural-to-urban migration has attracted the interest of a good number of scholars as "excessive rural outmigration fits nicely with several dominant theories of development and is thought to be responsive to rural adversity and the allure of modern wage structures in urban areas." In other words, studies on rural-urban migration are prone to be made fit to the framework of prevailing development theories, thus bearing the risk to lose the differentiation required when seeking to determine location-specific and often conflicting features of the migration phenomena in question. This is another example of the bias resulting from *a priori* assumptions and implicit value judgements which has been addressed in Section 1.3.2.

Applied to the case of northern Bolivia, this distinction suggests that the rubber collapse constituted a strong 'push' from the rural areas. It could be anticipated that this 'push' did not face with an equally strong 'pull' of the places of destination: the varied flows of rural-rural and rural-urban migration addressed in Chapter 4 rather point to selectivity with respect to the place of attraction. As to the place of origin, selectivity seems to have been hardly at play in case of the *barracas* given that their production mode implied little flexibility to offset the repercussions of the latest rubber crisis. In contrast, selectivity was of higher importance in the independent communities, some of which suffered out-migration while others experienced in-migration, depending on the absence or existence of alternate livelihood bases. In sum, the 'pull' of the town appears dominant but not exclusive, as rural-rural migration from the *barracas* to the independent communities depicts.

Migration studies should be as location-specific as possible to avoid broad inferences. It is also important not to limit oneself to the macroscopic aspects of migration, such as population or employment, but to start from the microscopic level, that is from individual behavior patterns as expressed in actions and decisions; in this context, the distinction between actual and potential migrants, as well as the choice of the definite destination are of special interest (Leloup 1996: 111-2). Yet migration studies at household level vary widely in terms of scope, methodology, and focus. At a more aggregate level, population shifts call for the determination of net migration patterns, among other things. This, however, faces with difficulties, as the latter hardly reveal the real magnitude of migratory flows let alone the underlying processes: "There are no 'net migrants'; there are, rather, people who are arriving at places or leaving them. Why they are doing so is central to understanding the dynamics of urban growth and decline" (Morrison 1977: 61).

Identifying the true motives of migration proves a methodological challenge. There is a broad consensus that rural-urban migration is used by many households as a survival strategy, although the poorest segment of rural populations may find the cost of such strategies prohibitive (Kasarda and Crenshaw 1991: 476). Some scholars even hold that the costs of migration are so high that only the upper strata of the villages can afford it; when poorer villagers migrate, they do so to less distant, and less lucrative, places and jobs (Lehmann 1986: 613). This would partly explain why not all can respond to the 'push' and 'pull' forces – which may be roughly the same for most of the people in a given area – in the same manner (see Bradfield 1973: 352). In order to answer what distinguishes a person who migrates from one who does not, a number of migratory differentials have been tested (Jansen 1969: 63). "Age, sex, level of education, marital status, socio-professional category, race and career states are frequently recorded as factors in determining a more or less mobile behaviour pattern. Furthermore, individual choices, and personal preferences, which cannot be reduced to an average, intervene and vary the resulting behaviour" (Leloup 1996: 103).

A general **migration theory** could not be developed as age was found to be the only differential existing: across time and context, persons in their late teens, twenties and early thirties were found to be more migratory than other groups (Thomas 1938, cited in Jansen 1969: 63; Bogue 1959: 504). Typically, migration studies are far from being as exhaustive as that of Thomas and they tend to reduce migration decisions to one master principle. Indeed, we face with a multitude of at times congruent, at times conflicting, viewpoints and theories that seek to explain migration. Some researchers see the migrants' choice to move chiefly rooted in the absence of alternate channels for survival in the existing economic structure (e.g., Porter 1976: 37). Others argue that non-wage components of the migration decision have largely been overlooked, in particular in econometric studies (Williamson 1988: 436-7).

Still others believe that the migrants themselves do not have a clear idea about their motives (e.g., Jansen 1969: 65, Browning and Feindt 1971: 49, Butterworth and Chance 1981: 39). Gugler (1969: 141) argues on a similar line by suggesting not to take the motives of migration put forward by the migrants themselves at face value as they may hide rather than reveal underlying causes.[514]

Numerous approaches to migration studies have yielded only limited results. They lack consensus on the underlying motives of migration as well as the methodology to be applied in search of them. For this reason, Leloup suggests a "systematic view of the migratory process", arguing that "migration is a complex phenomenon, the dynamics of which demand a systems analysis which goes beyond demographic, economic and spatial considerations to include the facts of individual behaviour and factors in decision-making, and at the same time takes into account how these change with time and affect each other" (1996: 101). The complexity of migration is reflected, *inter alia*, in the interdependency between the distance from and the opportunities offered in the place of destination. This is addressed by the concept of intervening opportunities, formulated by Stouffer in 1940 and extended in 1960. He suggests that "the number of persons going a given distance is directly proportional to the number of opportunities at that distance and inversely proportional to the number of intervening opportunities" (1940: 846).[515] As appealing this proposition may appear, as much it relies on the definition of 'opportunities' and their valorization. Doubtlessly, employment opportunities are paramount in this respect but here in turn we find an apparent ambiguity: rather than the actual employment available to an immigrant, it is the *prospect* to attain employment that attracts potential migrants (Leloup 1996: 105).

Further difficulties in migration studies arise through the involvement of value judgements: the redistribution of population may either be termed a 'movement', implying a certain degree of permanency, or 'migration', suggesting a more temporary change of residence (Butterworth and Chance 1981: 34). As we will see below, migration in northern Bolivia entails multiple residential shifts – both across neighborhoods and between rural and urban areas – most of which defy the definition of 'permanency'. This is consistent with a general trend in migratory patterns: in many cases there are a series of moves over lifetime rather than 'once for all' moves; such 'migratory careers' relate to four principal strategies of rural-urban migration in the Third World (Gilbert and Gugler 1992: 79):

circular migration of men

long-term migration of men separated from their families

family migration to urban areas followed by return migration to the community of origin

permanent urban settlement

[514] There is a number of reasons that may have caused a migrant to leave the place of origin which he or she might not be willing to exhibit to an interviewer; for example, a person may have become socially untenable in a given place because of a crime committed, debts accumulated, or the break of taboos. Evidently, the difficulty to collect reliable information is not unique to migration studies but common to all social science research relying on respondent information.

[515] "Another way of stating the same hypothesis is that the number of persons going a given distance is directly proportional to the percentage increase in opportunities at that distance" (ibid.).

In northern Bolivia, return migration due to 'migration failure' is nearly as frequent as more linear and purportedly successful migration patterns.[516] This phenomenon, however, has totally been neglected by scholars and development agencies, being mainly concerned with the towns' net immigration from the countryside. Such a neglect is not uncommon as migration studies have often been based on short-term observations and focused on immigrants rather than emigrants:

> "Another assumption which has been dominant in this field and is in part related to the manner in which the data is collected, is the 'snapshot' character of the unit act of migration. This idea that migration is usually a *once and once only* phenomenon has grown out of the emphasis on net change rather than gross movement" (Jackson 1969: 4).

To integrate the varied aspects of rural-rural, rural-urban and urban-rural migration within the framework of frontier urbanization, we need to have a closer look at the **broader concept of urbanization**. In particular, we shall scrutinize the social and economic spin-offs of the urbanization process in Amazonia. These effects are often ambiguous, especially when focussing on the economic opportunities of the recent arrivals: "As the bulk of the world's population shifts from rural to urban areas, poverty is becoming an increasingly urban phenomenon" (Kuchelmeister 2000: 49). The question remains whether immigrants can generally be expected to end up as urban poor in the low-wage informal sector, constituting a reserve army driven there as an employment of last resort (Becker 1995: 62)? And if so, who is to judge the migrants' situation? Studies throughout the Third World report, time and again, that most migrants consider that they have improved their condition (Gilbert and Gugler 1992: 69). What from a macro perspective appears as 'overurbanization', i.e. urban decay associated with overcrowding (Mehta 1964: 136, Williamson 1988: 426, Herbert and Thomas 1990: 51, Lu 1998: 76), is likely to be perceived differently at the grassroots level.

Overurbanization has typically been viewed as the tendency in developing countries for urbanization to outstrip either industrial or overall economic development (Kasarda and Crenshaw 1991: 470-1). The inability of industrialization to accommodate the mounting supply of labor from rural areas is consequently regarded as one of the major obstacles to sustained urban development: "Over-urbanization occurs through the operation of market forces that produce push and pull factors favouring the exodus of rural populations without providing sufficient jobs for the 'excess' urban population. Therefore, over-urbanization is usually accompanied by persistent urban problems, such as the lack of adequate housing, educational opportunities and health services, thereby creating miserable living conditions among a larger number of urban poor" (Lu 1998: 76). This quotation reflects the standard image of rapid urbanization in the South which tends to be seen as producing or reinforcing misery, deprivation, and poverty. Apart from these macro-level considerations, the concept of overurbanization is flawed with an implicitly negative image of cities. Browning and Feindt (1971: 48) make us aware of the underlying value premises (cf. Section 1.3.2) that have largely shaped our perception of what they call the 'great dichotomy' between rural and urban, or the village and the city:

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[516] This does not mean, however, that return migration – also called reverse or turnaround migration – needs to be generally regarded as failure. On the contrary, returned migrants are important mediators between rural and urban spheres. In a case study from the Andean Peru, for example, it was found that "returned migrants now occupy the positions of authority in the district and village. They have learned to deal with bureaucracies through their urban land invasion experience. Labor union membership has enabled them to develop political sophistication and organizational skills. ... The migrants have dual identities; they see themselves as members of the national culture as well as members of the village community. They are, in short, the mediators between the urban ideology of the national culture and the traditional ideology of the village" (Isbell 1974: 255).

> "However useful the great dichotomy may have been in other contexts, its application to migration has had deleterious effects. The reification of the dichotomy, unfettered by any empirical support, led to a conception of the community of origin, the village, that was idealized in terms of the extent, warmth and solidarity of familial and communal interpersonal relations. By definition, therefore, the community of destination, the city, must display opposite characteristics. The migrant is seen as wrenched from his community of origin of which he was an organic part, embarking, alone on a lonely journey to the great city. There, unshielded by any sort of social protection, he is exposed to the full force of an impersonal, even hostile environment. Is it any wonder that migration, from this perspective, can be anything but a traumatic experience where individuals are torn from the deep sociological roots of their community of origin and then exposed, in vulnerable isolation, to all the forms of disorganization and anomie endemic in the urban environment?"[517]

The concept of overurbanization has experienced cycles of acceptance and rejection; regardless of its operational definition, the concept remains arbitrary (Kasarda and Crenshaw 1991: 470-1). In many cases the underlying reasons of the urban 'pull' are hardly understood:

> "National governments, international organizations, and researchers often call attention to increasing levels of urbanization with alarm. Growing urban populations have strained the resources of city governments beyond their capacity to provide needed public services and infrastructure. Rampant violence, flimsy housing, and squalid living conditions are the daily lots of those who live in urban poverty. Yet, while much has been written on rural problems, we know little about urban livelihoods and the forces that conspire to keep urban dwellers poor, food insecure, and malnourished" (Ruel and Garrett 1999: 1885).

Propositions as the one cited are heavily influenced by the negative image of overurbanization. It also reflects that migration studies have frequently focused on the rural 'push' without acknowledging the often equally important 'pull' of urban areas. In Amazonia, for example, urbanization involves a complex set of phenomena that merit a more differentiated view. A timely interpretation of Amazonia's urban 'pull' is suggested by Smith *et al.*:

> "Urban areas, in spite of their higher living costs, crime, and pollution, offer better opportunities for jobs, schooling, and health care. In contrast, pioneer areas in Amazonia have fewer health and educational facilities, and roads that become impassable in the rainy season can isolate farmers from markets, hospitals and clinics, schools, and needed supplies. This impressive sponge effect of cities has undoubtedly saved the Amazon from even more extensive deforestation" (1995: 50).

This quotation addresses both push and pull factors which are at play in the process of urbanization throughout Amazonia. As "rural aspects appear dim to many, the urban scene more promising" (Gilbert and Gugler 1992: 64), this process needs to be viewed against the backdrop of rural-urban migration in Latin America and worldwide.

Mounting urbanization is a global trend that is particularly pronounced in Latin America (e.g., Beyer 1970, Morse 1974, Butterworth and Chance 1981, Pattnayak 1996).[518] The overwhelming reason for the South's increase in the level of urbanization (or percent urban) is (net) rural-urban migration, contributing directly through population movement and indirectly through its effect on the urban/rural fertility differential[519] (Firebaugh 1979: 201). In Latin America, the percent urban rose from 57% in 1970 to 74% in 1994, and might reach 85% by 2025 (UN 1995). Though in Bolivia the urbanization trend lags behind, the percent urban

[517] For a typical view of the allegedly traumatic incorporation into the world capitalist system, see Gilbert and Gugler (1992: 62-64).

[518] Only 16% of the Third World's population dwelt in urban areas in 1950 (Kasarda and Crenshaw 1991: 467), but shortly after the turn of the century more than fifty percent of it will be urban residents (UN 1995).

[519] In general, urban fertility rates are lower than those of rural areas but there is less evidence for mortality differentials (ibid.). In other words, rural-urban migrants are likely to have less children in town than they would have in the rural area.

increased from 34% in 1950 to 58% in 1992 (De Mesa *et al.* 1997: 761). In the northern Bolivian Amazon, it rose from 31% to 66% over the same period, reaching 84% in the Province of Vaca Diez alone (cf. INE 1992a: 9).[520] **Riberalta** has been one of the principal growth poles, accommodating 35% of the total population in 1992 as compared to 21% in 1950 (see Figure 4-1 in Section 4.4). Riberalta's recent growth has frequently been attributed to the rubber collapse as the principal factor of rural 'push'. Some even view it as the only factor explaining rural-urban migration over the past decade (e.g. Assies 1997: 46). Others see additional 'push' factors at play, viz. the insufficient size of parcels in independent communities, the lack of a rural educational system, and deficient health facilities (Quiróz 1996: 36-7), if not the rural areas' high infestation with tropical diseases (Van Beijnum 1996: 13). The urban 'pull' encompasses factors such as employment and income opportunities, along with the traditional perception of Riberalta as the focal point of the region (Verheule 1998: 11-2).[521] Rural-urban migration is further facilitated by improved access to town (Van Beijnum 1996: 13). However, no mention is made of urban 'pull' factors like better access to school and health facilities, local government institutions, electricity, and other urban services. Evidently, many push and pull factors are interrelated given the "variable mix of centripetal and centrifugal forces" (Morse 1974: 424-5).

Along with the remarkable influx of ex-forest dwellers, Riberalta has strengthened its function as the politico-administrative and economic center of the region. The newcomers have chiefly settled down on the town's periphery, paralleling a general trend of accelerated urbanization: the world over, peri-urban areas tend to have the highest growth rates, receiving up to 70% of rural-urban migrants or migrants from a town or city itself (Kuchelmeister 2000: 49). On Riberalta's new periphery, municipal and private investment hardly keeps pace with the rapidly growing demand for urban services and amenities. To ensure their economic survival in town, many peri-urban households keep being linked with the rural areas and, specifically, with the collection, processing, and sale of NTFPs. An interdependency between rural and urban areas based on NTFPs has been observed elsewhere in Amazonia (e.g., Wagley 1953, Padoch 1987, Vasquez and Gentry 1989, LaFleur 1992, Mori 1992, Bratschi 1999).

The picture of **urban Amazonia** has been shaped, *inter alia*, by the accounts of 'Amazon town' as a remote and somewhat sleepy place in the middle of a vast basin (see Wagley 1953, Pace 1997). Like many other 'Amazon towns', Riberalta owes its existence to the early days of rubber exploitation. But life here was truly sluggish only during the inter-war crisis of rubber trade when alternate forest products offset part of the rubber-related income loss. Over the past 50 years, however, the town has grown more than average such that it might eventually challenge the regional primacy of Trinidad, the departmental capital of Beni (Van Beijnum

[520] In 1950, Riberalta, Guayaramerín and Cobija combined had a population of 9754 (De Mesa *et al.* 1997: 760-1), as compared to a rural population of 21,603 in the Department of Pando and the Provinces of Vaca Diez and northern Iturralde. In 1992, the three urban centers had 81,161 residents (ibid.), while the rural population had risen to 42,628 (INE 1992a, b, 1997e). Northern Bolivia's rate of urban growth was 5.2% annually over the period 1950-1992, clearly outstripping the national average of 3.1% per year. In the adjacent Brazilian Amazon, urban growth rates in Acre and Rondônia over the period 1960-1991 were yet higher, reaching an annual 6.9% and 10.4%, respectively (cf. IBGE cited in Browder and Godfrey 1991: 7).

[521] According to Zeitum (1991: 72), every inhabitant of northern Bolivia, no matter whether living on a *barraca* or in an independent community, is a *Riberalteño* by feeling and affectivity, considering Riberalta as 'his town' where he lives sentimentally or physically. While this proposition holds true of the western parts of Vaca Diez and probably of much of the Madre de Dios, Federico Román, and Abuná Provinces, it definitely does not apply to the Nicolás Suárez and parts of Manuripi Provinces given their orientation toward Cobija.

1996: 13).[522] In the northern Bolivian Amazon, Riberalta's primacy goes uncontested since Guayaramerín has little more than half the former's population.[523] A central factor underlying this primacy is Riberalta's strategic location at the intersection of the confluence of the region's principal rivers with the La Paz-Guayaramerín highway. In fact, it has been the main *entrepôt* for most of the forest products extracted from the hinterland since the decline of Cachuela Esperanza in the 1940s.

Urban primacy has received various critical connotations. Though burdened by both conceptual and practical difficulties, primacy is thought to denote a lack of economic, political and social integration in any given system of cities (Kasarda and Crenshaw 1991: 471). From a world-systems perspective, urban primacy is viewed as an important component of dependent capitalism, whereby surplus value is transmitted from the periphery to the core (Timberlake 1985). In general, various scholars of critical political economy place urban growth in the context of capitalist development and penetration (e.g. Harvey 1978, 1985, Roberts 1979, Gordon 1984).[524] They emphasize the parasitic and monopolistic rather than the generative and relay functions of cities; a Latin American urban center is seen as an outpost of foreign politico-economic control which in turn dominates, exploits, depresses its own nation or regional hinterland (Morse 1974: 427). In this context, 'agricultural transition' stands idealtypically for the following process: along with the expansion of capitalist relations of production in the countryside, urban areas grow, small peasant holdings are consolidated into agro-industrial estates, and the peasantry transforms into an urban-based proletariat (Browder and Godfrey 1997: 34).[525] Though this approach has been criticized for assuming no previous articulation with capital, thus denying the heterogeneity of relations between so-called pre-capitalist and capitalist social formations (Bakx 1988: 141), it has been widely pursued.

Doubtlessly, **capitalist penetration** has affected northern Bolivia since the days of the great rubber boom, along with the steady growth of Riberalta, Guayaramerín, and Cobija. It is also true, as shown earlier, that surplus has been drained from the rural hinterland, with Riberalta playing a pivotal role in this process. We should bear in mind, however, that the rural areas in

[522] Between 1950 and 1992, the populations of Riberalta and Trinidad grew annually by 4.6% and 4.1%, respectively (cf. De Mesa *et al.* 1997: 760); disproportional growth was most pronounced over the period 1976-1992 when annual population growth amounted to 5.9% and 4.7%, respectively.

[523] Several definitions exist in the literature as to urban primacy. According to Mehta (1964: 137), one rule-of-thumb criterion for primacy is that the largest city in a regional (or national) urban system is at least double the size of the second-largest. While Riberalta has roughly double the population of Guayaramerín, the latter in turn has more than double the population of Cobija, the third-largest town in northern Bolivia. Portes (1976: 29), on the other hand, suggests an index of urban primacy which is defined as the ratio of the largest urban concentration to the sum of the population in the next three largest urban places. Applied to the case of northern Bolivia, Riberalta's primacy is reflected in an index of 1.03, indicating that its population in 1998 (56,393) (Secretaría Regional de Salud 1998) slightly exceeded the projected sum of the 1998 populations of Guayaramerín (36,966), Cobija (16,654) (INE 1997e), and Porvenir (about 1300 according to our village survey).

[524] "The most important transition in the anthropological study of the city ... occurred in the 1980s with the introduction of political economy" (Low 1996: 386). From a Marxian, or critical political economy, perspective, urban studies need to focus on the process of capital circulation; the shifting flows of labor power, commodities, and money capital; the spatial organization of production and the transformation of space relations; movements of information and geopolitical conflicts between territorially-based class alliances (Harvey 1985: xvi-xvii).

[525] Several authors stress that the subsistence sector and the capitalist sector can coexist temporarily, but they regard the process of expulsion and subsequent proletarianization of the subsistence farmer as inevitable (Bakx 1988: 143). This concept of 'functional dualism' (De Janvry and Garramón 1977) is complementary to that of 'urban transition', i.e. the redistribution from a predominantly rural, agricultural world to a predominantly urban, nonagricultural world (Firebaugh 1979: 199).

turn benefit of Riberalta's relay functions. Rondinelli (1983, 1988), for example, points to the critical functions and services performed by secondary and tertiary cities: they provide decentralized public services, a variety of household and consumer goods, demand for regional produce in local small- and medium-sized enterprises, direct outlets to the national space economy, and the diffusion of modern technology and information. Similarly, Morse (1974: 427) suggests to consider principal cities in urban systems both as diffusion centers and control centers, with the regional center as a development pole for its hinterland.[526]

The growth of medium-sized and small cities, or secondary and tertiary cities, in the interior of Amazonia has been referred to as '**urbanization of the countryside**' (Becker 1995: 64). Against this backdrop, Riberalta's growth can be viewed as that of a medium-sized urban center, whereas the growth of the rural sub-centers, as addressed in Chapter 4, falls into the category of smaller agglomerations. In both types of 'rural towns', rapid population growth is largely due to in-migration. It is here where the population finds access to schooling, health care, and local government facilities. However, if not all migrants were absorbed "the urban frontier would be a refuge for the less competitive migrants who are inclined to repeat migration to the extent that the centres generally do not have the capacity to retain them" (ibid.: 62). This implies a rather mobile floating population, which in Riberalta is characteristic from its very beginnings.[527] The persistent movement of Amazonia's population is seen as the logical outcome of the urban centers' limited capacity to absorb excess rural labor, whereby the spatial mobility is not the consequence of an increase in population, either at regional or national level (Martine and Peliano 1978), but an adaptive response to constrained economic opportunities.

The 'urbanization of the countryside' in northern Bolivia is linked to the forest sector in various ways. At a first glimpse, urbanization and forest product extraction appear highly antagonistic. But the concept of 'urban forestry' bridges part of this antagonism, as well as that of the general rural-urban dichotomy. Basically, there are two meanings of the term: "The broadest definitions regard urban forests as the entire forest area influenced by the urban population. In a more restricted sense, urban forestry relates to trees and woodland in towns and cities: garden and farm trees, street and park trees, remaining woodlands and emerging woodlands on vacant and derelict land" (Kuchelmeister 2000: 50). For the time being, urban forestry *sensu stricto* is of limited relevance in northern Bolivia. But in its broad sense, urban forestry encompasses the northern Bolivian Amazon as a whole, for virtually all forests in the region – except the slash-and-burn areas of rural small producers – are "influenced by the urban population". In addition to urban-based owners of cattle ranches or Brazil nut, palm heart and timber enterprises, thousands of urban-based families depending on forest product extraction – at least during some months of the year – leave their footprints on vast tracts of the forest. With urban forestry in developing countries being in its infancy (Kuchelmeister 2000: 50), it does not come as a surprise that this dimension of forest use by poorer households from (peri-)urban areas has largely been neglected by scholars and practitioners alike.[528]

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[526] From a regional perspective, Riberalta is indisputably the primate town. At national level, however, it ranks only tenth (De Mesa *et al.* 1997: 760), thus assuming the role of a secondary city. Guayaramerín (rank 14) and Cobija (rank 28) may be considered tertiary cities.

[527] Riberalta's origin dates back to 1882, when the *Casa Braillard y Clausen* occupied a site first named La Cruz. Founded officially on 3 February 1894, it accommodated no more than 254 individuals by 1896 but, accounting for its floating population, the figure doubled frequently (Ballivián 1896b: 51).

[528] It might be argued that the broad sense of 'urban forestry' is somewhat misled as, for example, nobody would talk of 'urban agriculture' just because rural areas producing crops for urban consumers could be regarded as

The **neglect of urban forestry *sensu lato*** leads to an underestimation of the actual importance of the peri-urban households' dependency on NTFPs with respect to the performance and stability of their livelihood strategies. Consequently, we poorly understand their incentives to continued participation in NTFP gathering and processing, the contribution of NTFP-based income to household economies, occupational 'careers' and other consolidation processes, as well as migration in response to economic shifts. For the purpose of this study, it is particularly instructive to highlight the role NTFPs play in the interdependency of urban, peri-urban and rural areas: rather than a rural-urban dichotomy, we can presume a rural-urban continuum of (non-timber) forest use. This would imply that social, economic, and occupational shifts between rural and urban areas are more gradual than generally supposed. Especially in Amazonia where we encounter a variety of 'rural towns', a rigid dichotomy between 'rural' and 'urban' thus becomes obsolete.

The investigation of urban-rural ties has first focused on the demographic aspects of rural-urban migration (see e.g., Caldwell 1969, Gugler 1969, Bradfield 1973, Rollwagen 1974), then shifted to the rural-urban continuum or interface[529] (see e.g., Preston 1978, Kirk 1980, Hunter *et al.* 1981), before emphasis has recently been put on rural-urban links manifesting in flows of goods, cash, and labor (see e.g., Baker and Pedersen 1992, Darbellay 1995, Paerregaard 1997, Tacoli 1998). The notion of the rural-urban interface implies that "the concept of urbanism as a process of urbanization is a composite package, with many of its components only becoming definable in contrast to the traits of ruralism." (Kirk 1980: 14). Banton (1973: 44) argues on a similar line, "two of the most important variables for the comparative analysis of urban social relations are rural-urban continuity and the strength of structural oppositions." The extent to which an urban life may be called 'rural' and vice versa can be derived by comparing the **salient traits of rural and urban life** (Table 5-1).

being "influenced by the urban population". Yet, as we shall see below, the link of Riberalta's population with the forested hinterland is so fundamental that the broad application of 'urban forestry' seems warranted.

[529] This should not be confused with the concept of the 'rural-urban fringe' which has been defined as "the area of transition between well organized urban land uses and the area devoted to agriculture" (Wehrwein 1942: 217).

Table 5-1 Salient traits of the rural-urban continuum.

Rural traits	Urban traits
Agricultural activities dominant	Commercial-industrial service activities dominant
Labor intensive systems	Capital intensive systems
Infrequent cash transactions	Frequent cash transactions
Competition less intense	Competition more intense
Retail establishments less specialized	Retail establishments more specialized
Primary groups dominant	Secondary groups dominant
Social mobility restricted	Social mobility less restricted
Seasonal routines dominant	Daily routines dominant
Residence and work place close	Residence and work place separate
Small amount of time spent in travel	Considerable amount of time spent in travel
Stress situations fewer and more irregular	Stress situations more frequent and regular
Politically conservative and passive	Politically radical and active
Low literacy requirements	High literacy requirements
Adolescent yearnings for town life	Adult yearnings for rural life
Organic, irregular environment	Inorganic, geometric environments
Quiet	Noise
Landscape changes few and usually gradual	Landscape changes many and often abrupt
Diffuse leisure activities	Focussed leisure activities

Source: Kirk (1980: 13)

Virtually all the traits listed in Table 5-1 has being characteristic of 'rural' and 'urban' life are self-explanatory. It needs to be emphasized, however, that everything occurring within the town is not equally urban, and even though certain sets of relations may be town-located, they could also develop in other surroundings (Mayer 1962: 584-5).[530] The traits will be used below to analyze a phenomenon often neglected by urban geographers, viz. the morphology of rural-urban interfaces, for which Kirk (1980: 18) suggests three basic forms:

initially, **insular** urban nuclei emerge: rural-urban migrants tend to form nuclei within the agglomeration whose linkages continue to lie out with the urban system;

a **zonal** structure and interface evolves during the process of consolidation: the rural islands within the urban agglomeration are gradually absorbed by the urban system;

a **linear** interface is achieved at the (theoretical) climax: as the urban agglomeration matures, it develops an integrated behavioral identity which is less vulnerable to penetration by rural traits.

While new arrivals to town are expected to form new, or join existing, insular urban nuclei, it is also commonly held that they face little alternative but accepting lowly remunerated

[530] In Brazil, for example, many urban lower class people were found to be "peasants living in the city" who are largely beyond the urban value system (Wagley 1960: 211).

activities in the **informal sector**. In this sense, world-system scholars see them as disenfranchised as their rural counterparts: "... the subordinate classes in peripheral countries are the peasantry and workers in the urban informal sector who are caught in a web of exploitation based on those very household production systems which tend to isolate them and thus deprive them of the basis for sustained solidary action" (Lehmann 1986: 602). Given the rural outmigrants' generally low background in terms of formal education, they tend to adopt 'easy entry' occupations, such as street vending, lottery ticket sales and the like; these occupations show little upward mobility (Peattie 1975: 118).

In general, many Latin Americanists have characterized the informal sector in terms of 'ease of entry', 'marginality', low productivity, low earnings, and its role as an occupational 'refuge' for unskilled migrants from the countryside (Cornelius 1975: 13). The standard image holds that "low levels of earnings in rural areas and the possibility of having substantially higher incomes in the city generate a very rapid rate of rural-urban migration. This leads to the crowding of job-seeking migrants into an essentially unproductive service and commercial sector in which earnings are naturally low" (Peattie 1975: 109).[531] In recent years, however, dualistic labor market theories have been increasingly challenged (e.g., Kannappan 1985, Kasarda and Crenshaw 1991: 478). The informal sector now tends to be viewed as important as the formal sector, since differentials in terms of income and permanency of employment do not display sharp disparities (Kasarda and Crenshaw 1991: 478). Peattie (1975: 119) concludes:

> "The great range of earnings to be found in the tertiary sector should in turn prepare us for the discovery that, whatever economists may think about how these people should be earning their livings in a better-ordered world, they themselves are not necessarily anxious to move from the independence of self-employment to wage labor—or at least, to the kind of wage labor which they might reasonably expect to obtain."

Despite the progress in acknowledging the structure and performance of the informal sector, certain stereotypes prevail. Even Peattie assigns the marginal neighborhoods of Bogotá the generic term 'peripheral low-income *barrios*' without having determined income levels at the periphery or in the core of the city (1975: 121). In fact, poor knowledge of income structures and related dynamics remains the Achilles' heel of most urbanization studies, as are the social relations governing these structures. There have been two chief approaches to identify and explain the differences in the quality of social relations in urban and rural surroundings: the one stressing changes in economic interdependence, the other changes in the interdependence of social relationships (Banton 1973: 47). In urban areas, though, much social interaction is impersonal and mediated through economic relations rather than personal ties (Goldschmidt 1997: vii-viii). This is one of the reasons why this study has a clear focus on economic changes, above all the identification of the dependency of peri-urban dwellers on rural-based income with emphasis on that derived from NTFPs.[532]

While it is acknowledged that **(forest-based) income** is an important indicator of forest dwellers' well-being (Wollenberg and Nawir 1998: 157), there is hardly any notion in the literature that the same may hold true of urban-based low-income groups. Wollenberg and Nawir (1998: 162-4) review ten case studies related to forest dwellers income, none of which took into account forest-based income of urban-based NTFP gatherers. One of the few studies

[531] Peattie (1975) dismantles the standard description which links urban poverty to this 'tertiarization' of the economy based on a case study from a peripheral neighborhood in Bogotá.

[532] The set of social changes will be addressed in detail in the second phase of the CIFOR/BMZ project on NTFPs, titled "Developing institutions for sustainable use of non-timber forest products" (CIFOR 1999).

addressing (forest-based) income of both rural and peri-urban dwellers owes to Schwartzman (1992). Based on a survey of 30 rubber tapper households on Seringal Cachoeira in Xapuri, Acre, and 20 rural-to-urban migrant households in two peripheral neighborhoods in Rio Branco, the capital of Acre, he concludes that "despite greater opportunities for wage work in the cities, a more diversified labor market, and greater integration into the market economy, it is not necessarily the case that migrants' incomes increase" (Schwartzman 1992: 60). In this context, it is important to bear in mind that even when cash income increases in town it may not offset losses of subsistence production (ibid.).

Another problem with the **investigation of household budget structures** is their intrinsic nature. In an impressive *ad hoc* trial, Wilk (1994: 365) and his colleagues sought to determine the household budgets of American college professors, assuming that this is an easy endeavor because of their having two incomes at most, regular and measurable expenses, limited kinship complexity and few outside obligations, as well as annual accounting for the Internal Revenue Service (IRS). To their utmost surprise, the sample of 24 households yielded 15 distinct systems of routine money management. This complexity aggravated the obvious lack of a congruent methodological underpinning with respect to household budget investigations:

> "Though we had a lot of theories, controversies and ideas, we simply had no vocabulary to describe household budgeting systems – no taxonomy, no definitions, not even a clear idea of how to go about building them. This absence of common tools and vocabulary means that every ethnographic account works in a relative vacuum, attacking the problem anew; the eyes rediscover the nose every morning" (Wilk 1994: 366).

Household budget studies are further obstructed by the fact that conflict rather than concord governs the decisions who contributes to, or consumes part of, the household budget. Wilson (1991) therefore refined the concept of the 'cooperative conflict model' suggested by Sen (1984): this model implies that household members cannot be decomposed into autonomous bargaining individuals, nor aggregated into placid collectivities, though doubtlessly they have certain aims in common. This is especially important when seeking to identify household expense structures, an undertaking I refrained from for the obvious difficulties, if not impossibilities, involved. Moreover, the often complex sets of property and pooling arrangements within and across households were generally beyond the scope of this study.

In this section, I have outlined the importance of rural-urban migration in the context of (over) urbanization, and the concept of urban forestry as mediator on the rural-urban interface. This conceptual framework of frontier urbanization from an urban household perspective will be employed for the case of Riberalta and its hinterland in northern Bolivia. The following sections will highlight the role of NTFP-based income in peri-urban livelihood strategies, related migration patterns, and the effect of increased industrialization of the urban-based Brazil nut industry on both income and migration. It thus addresses the following guiding questions formulated in Section 1.2.2:

(1) Why did/does income derived from gathering, processing, or sale of Brazil nuts and other NTFPs vary across households in rural and peri-urban areas?

(5) Why did/do agro-extractive households migrate from rural to urban areas whilst others continue to secure their livelihoods in the forest?

(6) What is the impact of increased industrialization in the Brazil nut industry on both the collectors and the laborers of the processing plants?

Methodology and methods

An important share of the residents of Riberalta's peripheral neighborhoods are recent arrivals from the rural areas of the region. To elucidate their interdependence with the rural area and especially their reliance on the gathering, processing, and marketing of NTFPs relative to long-established Riberalta dwellers and extra-regional migrants, a peri-urban household survey was conducted in 1998/99.[533] To this end, an operational definition of 'household' had first to be elaborated. While at a first glimpse this appears not too demanding a task, anyone experienced in household investigations can tell a thing or two about the difficulty to define this unit of study. "Household membership is usually defined as those who 'share the same pot', under the same roof.[534] However, the strong commitments and obligations between rural- and urban-based individuals or units show that in many instances these are 'multi-spatial households', in which reciprocal support is provided across space" (Tacoli 1998: 70). This is exactly the situation in northern Bolivia where the intrinsic system of social and economic relations within and beyond the household boundaries hardly permits an objective classification of 'full' household membership on simple premises.[535]

Wilk and Miller (1991: 64) point to the fact that "in areas with high rates of mobility and where people may belong to several households, traditional census methods can lead to very deceptive results that are poor guides for policy making and the delivery of services." They see the basic problem of conventional census methodology in insisting that each person belongs to a single domestic group, and in locating a 'household' in a single spot on the map in an identifiable community (ibid.). To account for the culturally and demographically relevant features addressed, the 'same-pot-same-roof' criterion was modified in that **household membership** covered both co-residents and those away from the principal dwelling who continue to **contribute to and/or benefit from** activities for mutual reproduction (cf. Vincent 1998: 183). As this definition includes persons of varying affiliations with different households, some of whom may live in a given household full-time only for seasons, weekends, or holidays, a systematic approach to residence was required. Following Wilk and Miller (1991: 67-8), four categories of household membership were differentiated:

Full-time residents reside in a given household for six months a year or more[536]

Part-time residents reside in a given household between one and six months a year

Absent members reside in a given household for less than one month a year

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[533] The distinction between these three groups, suggested by Verheule (1998), proved appropriate for the purpose of this study. For further details, see below.

[534] This 'one-pot, one-roof' concept of the household as a social unit dates back to Tschajanow – in the English literature referred to as Chayanov or Cajanov – the 'father' of the peasant economy (see Tschajanow 1923).

[535] For instance, elder children of a rural household may stay with an aunt in town for better access to schooling. Reimbursement for the costs incurred is done in kind (rice, manioc, plantains, etc.) rather than through monetary transactions. Another example is the prolonged co-residence of in-laws after the death of their husband or spouse. The widow or widower is then maintained by relatives, contributing labor to the host household.

[536] Absence from peri-urban households should be extended to six months a year without compromising 'permanency', since their members may participate in other forest-based activities in addition to the *zafra*. In contrast, full-time residency in the rural areas was only assumed when the absence of a given household member did not exceed four months a year (Stoian, in prep.). 'Permanent' rural dwellers can be expected to leave their resident community only for a maximum of four months to partake in the Brazil nut harvest on a *barraca*. Typically, they first secure the nuts from their own parcel which is also the place where agricultural and other extractive activities are performed.

Long-term visitors have resided in a given household for more than six months
It needs to be stressed that despite the at times loose residential affiliation with a given household, the main criterion for membership is that the income is pooled or, as is the case with absent children, that an absent household member for the major part is dependent on benefits accruing from household income and/or production. Household income was a major topic as "estimating the incomes of people whose livelihoods depend on forests is key to understanding their well being and use of the forest. Yet there has been little agreement about the methods to undertake such assessment" (Wollenberg and Nawir 1998: 157). Based on product approaches, general valuation methods are available for NTFPs (e.g., De Beer and McDermott 1989; Godoy and Lubowski 1992; Godoy and Bawa 1993; Godoy *et al.* 1993, 1995, 2000; Condon and White 1994; Ricker and Daly 1997). On the other hand, available approaches to determine peri-urban income frequently exclude a refined methodology to ascertain forest-based and, specifically NTFP-based income.[537] Recently, however, progress has been made in refining such methods (e.g., FAO 1995, Townson 1995, Wollenberg and Ingles 1998).

After having defined the household as the principal unit of study and having ascertained the methodology to determine the related sources of income, the peri-urban study area had to be identified. Riberalta consists of some 33 neighborhoods (*barrios*), about half of which can be classified as peripheral (*barrios marginales*).[538] These neighbourhoods received the bulk of rural-urban migrants over the past decade. They came into existence chiefly as a result of the *Plan Social de Dotación de Terrenos* promulgated by the Municipality of Riberalta in 1990 (Van Beijnum 1996: 15).[539] Within the context of this study, I was particularly interested in the process of consolidation going on in the peripheral neighborhoods in terms of employment and income opportunities as well as residential stability. To this end, I selected four *barrios* differing in age and, presumably, consolidation. Based on information obtained from the representatives of neighborhood councils (*Juntas Vecinales*) and their umbrella

[537] A comprehensive survey of income sources in town proves even more difficult than in rural areas. Unlike the latter where typically there is a broader range of non-cash income sources (Schwartzman 1992: 60), it is the cash income sources that are difficult to determine in town. Compared to the rural areas, there are more clandestine sources of income, in particular if derived from 'sex and drugs and rock 'n' roll', i.e. prostitution, drug trafficking, and various kinds of entertainment, not to mention (petty) theft. Since they touch upon socio-cultural taboos, these sources of income are beyond the reach of the researcher. Yet it is known that rural-urban migrants can subsist for considerable periods on casual labor, relatives, and illegal activities (Gugler 1969: 144). This is also true of Riberalta's periphery where almost a third of the households surveyed were affected by burglary.

[538] The exact number of *barrios* cannot be determined as both the Municipality of Riberalta (HAM) and the Federation of Neighborhood Councils (FEJUVE) operate with conflicting figures and maps. In addition, certain neighborhoods show genuine tendencies for separation and, as a consequence of consolidation, the inhabitants of large *barrios* such as Los Tajibos have established more or less demarcated sub-units they wish to be registered as *barrios* of their own. This step would enable them to decide in a more decentralized fashion about the use of the funds accruing from the Popular Participation. Against this backdrop, it is even more difficult to determine the exact number of peripheral neighborhoods, for this would involve additional criteria of distinction. According to Verheule (1998: 1), Riberalta numbered around sixteen neighborhoods on its periphery in 1996.

[539] The *Plan Social* entailed the allocation of land, which had been expropriated – for a compensation – from large landowners within a radius of five kilometers around Riberalta, to needy families who recently had arrived from the countryside. Each family was granted a parcel of 500-600 m² at an initial rate of Bs.1/m² (US$0.31/m²), stipulating settlement within 12 months and non-transfer of the parcels for five years (ibid.: 15-8). Earlier attempts in Bolivia to expropriate urban properties larger than one hectare in size – provided they were unimproved or contained only unimportant construction – had been confined to La Paz and Cochabamba, although the 1954 Urban Property Reform applied to urban radii within the city limits of all departmental capitals (Rojas 1972: 179).

organization FEJUVE (*Federación de Juntas Vecinales*)[540], selection took into account criteria such as the year of foundation, the number of residents, local infrastructure, as well as previous surveys.[541] Among the *barrios* thus selected, *Los Almendros* was the oldest (founded in 1982)[542], followed by *Villa Don Carlos* (1990), *1° de Diciembre* (1993), and *San Juan* (1996) (for the salient features of these neighborhoods, see Annex 3). Generally, the younger a given *barrio* the farther it is located from Riberalta's center (see Map 2).

[540] As a matter of fact, there were two FEJUVEs by the time of the survey. The previous president had been dismissed because of rumors on misappropriation of funds. He founded another neighborhood council under the same name and seemed quite successful in his campaigns, not least because he had appropriated most of the former documents and, equally important, the organization's official banner. The presidents of both neighborhood councils proved collaborative and provided often complementary information.

[541] Previous peri-urban household surveys had been conducted in 1995 by Van Beijnum (1996) in *1° de Septiembre* (founded in 1983), *Centenario* (1992), and *Los Tajibos* (1991), and in 1996/7 by Verheule (1998) in *Pueblo Nuevo* (founded in 1964), *Verdolago* (1990), *El Cerrito* (1993) and *San Juan* (1996). While the survey conducted by Van Beijnum focused on social and demographic features, Verheule put emphasis on political aspects of the peripheral neighborhoods' emergence, features of the labor market, and the occupational mobility among groups differing in terms of migratory status. Though my focus was on income aspects which had virtually been absent in these surveys, I selected different *barrios* to obtain complementary data – with the exception of *San Juan*, the youngest among the peripheral neighborhoods officially registered by the HAM. Though surveyed by Verheule in 1996/7, I deemed it necessary to include this *barrio* for its recent foundation. Another survey of "120 households in some 'marginal' neighborhoods of Riberalta" had been conducted by Assies (1997) in December 1994. The author makes no mention of the neighborhoods' names or the methodology applied. The few references made in the text to the survey, as well as its short duration, point to a rather rapid peri-urban appraisal.

[542] This neighborhood is neither part of the real periphery of Riberalta nor of its center. Lying halfway between the outskirts and the core area (*casco viejo*) it shares characteristics of both. Its older part had been founded in 1982 while more recent blocks in its South date back to 1989. In general, *Los Almendros* is fairly consolidated, thus providing the comparative background to the three peripheral neighborhoods proper.

In the four *barrios* a household survey was carried out between April and September 1998. All *barrios* follow a checkered pattern, encompassing blocks (*manzanas* or *cuadras*) of 100 by 100 meters each. As a preparatory step, I mapped occupied blocks and those that were untenanted, assisted by Fátima Baqueros, a forestry student of the CIF in Riberalta. In each *barrio* we selected three blocks at random to determine the respective number of households. All residential units of the 12 blocks thus obtained were visited to inquire about household composition and the length of residency. Only those families were considered for in-depth interviews which had resided for more than a year in a given *barrio*, for the survey aimed to determine the annual income of peri-urban dwellers. To this end, ten households per block were selected at random. At this stage, I trained F. Baqueros in interview techniques so as to enable her to conduct the in-depth interviews on her own. After employing a pre-test in ten households and adjusting the interview design, 120 in-depth interviews were conducted between May and September 1998. In a parallel step, F. Baqueros entered the data in an MS Access data base that I had designed. Monitoring and intense conversation during the process of data collection and data entry ensured their quality and consistency.

In-depth interviews were carried out as semi-structured interviews with household heads, their spouses and/or other knowledgeable household members. They focused on demographic and social aspects, residential histories, as well as income from extractive and agricultural activities, urban wage labor, or salaries, rent, and remittances. Though several questions referred to previous years, main focus was on the income derived during the year before the survey, since for obvious reasons the respondents could not recall all incomes from more previous periods. Between April and July 1999, all 120 households were revisited to inquire about their participation in the Brazil nut season 1998/99.[543] This proved especially interesting, as the sudden drop of the prices paid to the Brazil nut gatherers – the first after steady price hikes throughout most of the 1990s – promised to shed more light on the incentives for participation in the strenuous Brazil nut harvest.

Studies of the behavior of rural-urban migrants in an environment supposedly more risky than their former rural setting, typically involves aspects of risk pooling and inter-household transfer networks. In the literature, various models have been suggested that address the means by which households smooth income and consumption (e.g., diversification of activities, private transfers, capital markets), thus providing a valuable complement to the consumption-based studies of risk pooling (Cox and Jiménez 1998: 622). As an investigation of consumption patterns would have been beyond the scope of this study, it focused on income formation, addressing private transfer networks through the inclusion of remittances.

To ensure comparability with a previous study, it seemed advantageous to resort to the definition of migratory status as suggested by Verheule (1998: 15): he distinguishes three groups of origin, viz. non-migrants ('*Riberalteños*'), forest migrants, and extra-regional migrants for his analysis of labor market variations. To this end, he draws on the concept of 'formative years' suggested by Balán *et al.* (1973: 62) which entails the "community of origin where the individual spent the largest part of his formative years, taken here as the period between the ages five and fifteen. It is during this age interval that individuals acquire their basic orientation to the world outside the family circle as well as the fundamentals of their formal education." But both Balán *et al.* (1973) and Verheule (1998) fail to allow for the adaptation of migrants: irrespective of the formative years in the community of origin, a

[543] This posed difficulties in some cases, as one household head had died by the time of the second survey and others had relocated themselves, either individually or with the entire household (see Section 6.6).

migrant can be expected to adapt to the conditions at the place of destination in a certain period of time.[544] For the purpose of this study, I defined a period of twenty years as a 'second formative period': if a Riberalta immigrant had spent at least the last twenty years prior to the survey in Riberalta, he was regarded a '*Riberalteño*'. Persons that spent most of their 'formative years' or at least ten years in the rural area of northern Bolivia or outside the region before migrating to Riberalta were grouped as 'ex-forest dwellers'[545] and 'extra-regional migrants', respectively – unless the criterion of the 'second formative period' applied (for an overview of the criteria, see (Table 5-2). The groups of origin refers to the heads of household, as these persons are typically the ones who have, *inter alia*, a strong bearing on the decision to migrate or, in case of the town dwellers, to move to a certain neighborhood.

Table 5-2 Criteria applied to determine the migratory status of the heads of peri-urban households in Riberalta, northern Bolivia.

Group of origin	1st criterion		2nd criterion		3rd criterion
Ex-forest dweller	'formative years' spent in rural northern Bolivia	or	at least ten years spent in rural northern Bolivia	and	last twenty years not or not entirely spent in Riberalta
Extra-regional migrant	'formative years' spent outside northern Bolivia	or	at least ten years spent outside northern Bolivia	and	last twenty years not or not entirely spent in Riberalta
Riberalteño	'formative years' spent in urban northern Bolivia	and	at least ten years spent in Riberalta	or	at least last twenty years entirely spent in Riberalta

Source: Own elaboration.

Note: 'Formative years' is the period between the ages five and fifteen (Balán *et al.* 1973: 62).

In a strict sense, the above criteria are not mutually exclusive; yet they were established as pragmatic criteria allowing an unambiguous classification of all households surveyed.

Demography and migratory patterns

Demographic features of peri-urban households

The 120 households surveyed at the periphery of Riberalta encompassed 626 household members in 1998, that is the average household had 5.2 members. Their vast majority (95%) are full-time residents, followed by part-time residents (2.4%), long-term visitors (2.1%), and

[544] For example, a sixty-year old person who was born and reared in the countryside until the age of fifteen and who has lived in Riberalta since should not be considered an ex-forest dweller: he is very likely to have adopted an 'urban way of life' and can hardly be expected to differ because of his 'rural formation' from somebody of the same age who has lived in Riberalta throughout his lifetime.

[545] I prefer the term 'ex-forest dwellers' over 'forest migrants' as the latter leaves open whether it refers to the place of origin or the place of destination; the terms' meaning is equivalent though.

absent household members (0.6%).[546] Male- and female-headed households make up 90% and 10%, respectively. All compound households, that is households comprising at least a couple and their children, are headed by a male, with married (41.6%) and cohabiting (42.5%) couples being equally represented. The remainder of the male-headed households comprises men being separated (2.5%), singles (1.7%), and widowers (1.7%). Female-headed households are those of single women (2.5%), widows (2.5%), and women living apart (2.5%) or divorced (2.5%) from their husbands. Fecundity among the peri-urban households is high, with a household having 5.1 children on average.[547] In the age group 0-4 years, there are 110 children per every hundred mothers aged between 15 and 44 (supposed to be the reproductive age), as compared to 117 and 74 in rural and urban Beni, respectively (INE 1992a: 12). In fact, many demographic features of peri-urban households relate to the rural rather than the urban areas, as we will further see below.

Housing is a conspicuous example for the rural-urban continuum encountered at the periphery of Riberalta: the *casa rústica*[548] typical for the countryside is simply reproduced in more or less extended nuclei on the town's periphery. Among the four neighborhoods sampled, *San Juan* consists entirely and *1° de Diciembre* predominantly of such 'rural' houses. As consolidation advances, more and more peri-urban dwellers dispose of the means to upgrade their houses with 'urban' materials such as corrugated or tiled roofs, brick walls etc. In *Los Almendros* this process has already involved more than fifty percent of the houses and in *Villa Don Carlos* similar shares have been reached. But for the time being the insular nuclei at the town's periphery have largely been bypassed from urban services such as electricity and potable water, thus reinforcing their rural character. Only 31% of the sampled households were connected to the municipal power supply[549], 2% ran their own power generator, and the remainder (67%) had to rely on kerosene or diesel lamps, if not candles. Most of the households (75%) own the lot on which they live; others reside on lots owned by family members (21%), but only a small fraction (4%) needs to rely on rented lots or those owned by persons other than the own kinship. As to lot ownership there is no significant difference across the *barrios* sampled[550], nor across the groups of origin. This shows that the *Plan Social* has largely accomplished its objectives, viz. to enable rural-urban migrants and low-income groups from the urban areas to purchase individual lots at nominal rates. There is, however, a notable difference concerning the preference of certain neighborhoods as expressed in their varied composition with respect to the groups of origin (Table 5-3).

[546] Though household members other than full-time residents amount to only 5% of the sample population, they may have a crucial role in contributing to the household budget and/or in consuming from it. Thus, the distinction of four types of household membership proved a valuable approach to determine overall household budgets and social relations extending beyond the nuclear family.

[547] This even slightly exceeds the 4.9 children per mother estimated for Vaca Diez as a whole (República de Bolivia 1998: 5).

[548] This is a mud brick house with a thatch roof from patujú (probably *Calathea* spp. or *Costus* sp.), motacú (*Attalea phalerata*), cusi (*Attalea speciosa* Mart. ex Spreng.), palla [*Attalea butyracea* (Mutis ex L.f.) Wess. Boer] or, in case of better-off residents, the durable but relatively costly jatata palm (*Geonoma deversa*).

[549] About two-thirds of the households surveyed in *Los Almendros* and *Villa Don Carlos* were connected to the public power supply, whereas *1° de Diciembre* and *San Juan* were entirely cut off.

[550] The only exception is *San Juan* where 93% of the households surveyed own the lot they live on. Here, the average age of the household heads is fairly low, indicating that especially younger couples with scarce financial resources, eager to live independently of their parents, move to Riberalta's most peripheral neighborhood.

Table 5-3 Demographic composition of the peripheral neighborhoods sampled in Riberalta, by migratory status of household heads.

Neighborhood / Migratory status	n	*Los Almendros* (1982)	*Villa Don Carlos* (1990)	*1° de Diciembre* (1993)	*San Juan* (1996)
Ex-forest dweller	44	8	4	23	9
Extra-regional migrant	14	5	7	0	2
Riberalteño	62	17	19	7	19

Source: Own data from Peri-Urban Household Survey 1998.

Note: Foundation year in parentheses.

Ex-forest dwellers tend to settle in the more recently founded and hence less consolidated neighborhoods (Table 5-3). This is due largely to their lower plot prices, amounting to US$0.4/m² in *San Juan* as compared to US$5/m² in *Los Almendros* (see also Annex 3). Higher plot prices can rather be afforded by old-established Riberalta dwellers or extra-regional migrants who arrive with some savings at their disposal. In contrast, *San Juan* as the most peripheral neighborhood has attracted a relatively high number of younger *Riberalteños* who sought independence from their parents at low installation costs. Compared to the other *barrios* more houses here are of a makeshift character, often being constructed with waste wood from a nearby sawmill. Contrary to popular belief, this *barrio* is not dominated by ex-rubber tappers expelled from the *barracas*. Within the sample, these have rather settled in *1° de Diciembre* where the whole setting is hardly different from an independent community in the rural area, save for the intermittent drone of aircraft engines wafting over from the nearby airstrip. The sample population at Riberalta's periphery resembles the rural population of Beni and Pando not only in terms of housing but also as regards higher fertility and mortality rates as compared to the urban population of northern Bolivia (Table 5-4).

Table 5-4 Age structure of Riberalta's sample population in 1998, as compared to the population of the Beni and Pando Departments in 1992.

	0-14 years	15-64 years	65+ years
Urban Pando, 1992	41%	56%	3%
Urban Beni, 1992	45%	52%	3%
Rural Pando, 1992	46%	52%	2%
Riberalta, 1992	47%	50%	3%
Peripheral Riberalta (sample), 1998	**49%**	**50%**	**1%**
Rural Beni, 1992	50%	48%	2%

Source: 1998 data from own Peri-Urban Household Survey; 1992 data from INE (1992a: 11, 1992b: 9, 1997i: 1).

Note: 'Urban Pando' refers to Cobija; 'Urban Beni' includes Trinidad, Riberalta, and Guayaramerín.

In northern Bolivia, as elsewhere, the urban population is characterized by lower fertility rates in comparison with the rural area. This is typically reflected in a lower share of children and adolescents below the age fifteen. The population of Riberalta as a whole depicts an intermediary stage between urban and rural areas, as shown in Table 5-4. This is due in large part to high fecundity in its peripheral neighborhoods. At the same time, the distinctly lower representation of the elder population (65+ years) points to a lower life expectancy here, although the low share of 0.6% could also be seen as a hint that elder people shun the marginal *barrios*. That higher mortality is more likely an explanation is underpinned by the high mortality among children, amounting to 134 per 1000 children born alive in the neighborhoods sampled as compared to 101 for the whole of Vaca Diez (INE 1999c: 1) or 92 at national level (INE 1997h: 1).[551] The excessive rate of child mortality in the peripheral neighborhoods needs to be viewed in context of further demographic features relating to the households' group of origin (Table 5-5).

Table 5-5 Salient demographic features of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia: mean values of age of male household heads (A ♂) and of their spouses or female household heads (A ♀), number of years of school attendance of male household heads (SA ♂) and of female household heads or spouses (SA ♀), number of household members (HH), number of children (CH), and number of deceased children (DCH), by group of origin.

Group of origin	A ♂	A ♀	SA ♂	SA ♀	HH	CH	DCH
Ex-forest dwellers	40.7	36.4	5.0	4.7	5.9	7.0	1.5
Extra-regional migrants	38.2	33.5	7.5	7.7	5.2	4.7	0.4
Riberalteños	35.4	32.1	8.3	7.5	4.8	3.8	0.2
Total	**37.6**	**33.9**	**7.0**	**6.5**	**5.2**	**5.1**	**0.7**

Source: Own data from Peri-Urban Household Survey 1998.

Ex-forest dwellers are distinct from extra-regional migrants and *Riberalteños* in terms of the most salient demographic features (Table 5-5). Among the male heads of household[552], ex-forest dwellers tend to be older than extra-regional migrants or *Riberalteños*; their spouses and female household heads are four years younger on average. Typically, the heads of ex-forest dweller households and their spouses have completed no more than primary education, whereas the other two groups have accomplished lower secondary education. Ex-forest dwellers have clearly more children than their counterparts from outside the region or Riberalta which is, *inter alia*, a consequence of their higher average age and hence their more advanced life cycles. In addition, their higher number of children explains largely why the households of ex-forest dwellers count more members and, to a certain extent, why they suffer from higher child mortality. But the latter also owes to the fact that at least part of their children have been reared in the countryside where medical facilities were largely absent. In

[551] The figure of the survey is slightly inflated in comparison to the INE data because the latter refer to the mortality of children up to the age of five, whereas the former includes all children of the respondents that had died by the time of the survey. This, however, explains the huge discrepancy only to a limited extent, as the mortality rate of children usually drops significantly beyond the age of five.

[552] Of the 120 households surveyed, 108 were headed by a male and 12 by a female. As none of the latter had a spouse and only 7 of the former had none, the households comprised 108 men and 113 women.

contrast, child mortality is lowest among *Riberalteños* who have benefited from better access to health facilities for most of their lifetime.
Many of the above features are interrelated as, for example, the decision to have more children can also be the consequence of the higher child mortality experienced. That ex-forest dwellers are clearly disadvantaged in their health status is reflected in the significantly higher number of days of sickness as compared to extra-regional migrants and *Riberalteños*: the male household heads among these groups report to be sick during an average 20.0, 5.2 and 7.8 days/yr., respectively; similarly, sickness prevents female household heads and spouses from working for 19.2, 5.4 and 6.2 days/yr., respectively. This prompts the question of accessibility of health services and medical insurance. We have seen in Chapter 4 that lacking health care in the rural areas contributes to the 'rural push'. But do rural-urban migrants face with better services and amenities in town which may contribute to the 'urban pull' (see Table 5-6)?

Table 5-6 Degree of knowledge on and application of traditional medicine, as well as accessibility of health insurance in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin.

Group of origin	Knowledge of traditional medicine	Application of traditional medicine	Accessibility of health insurance		
			none	part of the household	all household
Ex-forest dwellers	2.1	2.0	79%	11%	11%
Extra-regional migrants	2.1	2.1	71%	0%	29%
Riberalteños	2.2	1.6	78%	5%	17%

Source: Own data from Peri-Urban Household Survey 1998.

Note: Household members were inquired about their knowledge and the application of traditional medicine, in particular the use of medicinal plants. 'High', 'medium' and 'low' knowledge or application were assigned the numeric values '3', '2' and '1', respectively. Presented are the mean values; the value of 1.6, for example, stands for low to medium application of traditional medicine. Slight divergences of the percentages are due to rounding.

All households surveyed reported to have access to a nearby health post which they contact in case of minor diseases. Here, medical examination is typically free and cures are available at nominal rates. But as soon as someone suffers from a more serious disease, most of the households face a dilemma: their vast majority does not dispose of a health insurance nor the financial means to seek for a more sophisticated treatment in the hospital of Riberalta or even outside the region. Only one tenth of the ex-forest dwellers but about one-sixth of the *Riberalteños* and almost one-third of the extra-regional migrants have all household members medically insured, enabling them to approach such a treatment (Table 5-6). Traditional medicine is only partly an alternative. Though across the whole sample there is moderate knowledge of medicinal plants and related folk cures, their application is far from being high; in particular the *Riberalteños* are less inclined to resort to traditional medicine, probably because of its rather low recognition among town's folk given that allopathic remedies are readily available for the most common diseases. In contrast, immigrants exhibit a more intense application of traditional medicine, a habit that can be traced back to their places of

origin. Compared to their rural counterparts, peri-urban households have better access to health care but this is still far from being satisfactory. Nevertheless we may attribute a certain 'pull' to the health facilities accessible in town. The same may hold true of educational facilities, but before we embark on that topic we need to clarify the educational background of the household heads and their spouses (Table 5-7).

Table 5-7 Educational background of household heads and spouses in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin (in percent).

Group of origin	None		*Básico*		*Intermedio*		*Medio*		*Bachillerato*		Specialist	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Ex-forest dwellers	8	7	56	57	21	19	15	14	0	2	0	0
Extra-regional migrants	0	0	38	36	15	14	23	29	15	14	8	7
Riberalteños	0	0	23	25	25	23	38	37	13	16	2	0
Total	**4.1**		**36.7**		**26.7**		**31.7**		**0.9**			
Riberalta 1992	9.0		41.6		22.9		21.3		5.3			

Source: Own data from Peri-Urban Household Survey 1998, except for 1992 data of Riberalta which are based on INE (1997i: 2).

Note: Formal education follows the Bolivian classification, where *Básico* (class 1-5) is primary school, *Intermedio* (class 6-8) is lower secondary school, *Medio* (class 9-12) is higher secondary school, and *Bachiller* is A-Levels; a specialist here has graduated from a polytechnic. Slight divergences are due to rounding. When comparing the National Census data of Riberalta with that of our survey, it needs to be borne in mind that the former refer to the maximum level of education reached by all persons above the age of five, whereas our data encompasses adult persons only.

There are no significant sex differentials in terms of formal education (Table 5-7). Rather, the group of origin determines to what extent peri-urban dwellers have obtained formal education. Obviously, ex-forest dwellers faced less opportunities to obtain education beyond the primary level, if they had any, and they are not better educated than those who remained in the countryside (Stoian, in prep.). This is in contrast to the general findings of migration in Latin America which suggest the existence of a positive relationship between migration and educational achievement (Butterworth and Chance 1981: 59). Rather, it confirms one of the hypotheses of Bouvier *et al.* (1976: 31), according to which the less advanced a society, the more likely migrants will be educationally inferior to non-migrants. But given the short duration of education in the countryside along with its presumably low quality, the difference between somebody who completed primary education and a person who has studied only for two years may be minimal. These considerations notwithstanding, *Riberalteños* are better-off in terms of education as three-quarters have enjoyed secondary education. In-between are extra-regional migrants, although at the level of graduates they catch up with the *Riberalteños*. These findings refer to the adult population; the patterns of school attendance among their children holds even more dramatic results (Table 5-8). Unfortunately, our data can only partly be compared to the National Census data for the whole of Riberalta, as the latter includes children below the typical ages of accomplishing a given level of education. Even so it is striking that persons who completed higher secondary education or tertiary

education are largely absent from the sample population while their share is around five percent for Riberalta as a whole. Evidently, people with a higher education tend to settle in the town's core area, whereas the semi-periphery and periphery are domains of those with a lower formal education.

Table 5-8 School attendance and drop out rates, as well as higher education among the children of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin (in percent).

Group of origin	*Básico*		*Intermedio*		*Medio*		Higher education
	attending	abandoned	attending	abandoned	attending	abandoned	
Ex-forest dwellers	20.9	27.8	6.2	6.9	2.6	2.0	0.3
Extra-regional migrants	24.2	1.5	10.6	9.1	6.1	13.6	7.6
Riberalteños	25.7	9.8	13.8	11.7	5.0	0.0	10.6

Source: Own data from Peri-Urban Household Survey 1998.

Note: Formal education follows the Bolivian classification (for the details, see Table 5-7). 'Higher education' involves *Bachiller* (A-Levels), graduate and post-graduate studies. Lines do not add up to 100 percent as pre-school-age children and those who deceased are not included. In addition, a small fraction (< 3%) of children at school age did not attend classes.

Children of ex-forest dwellers are clearly disenfranchised in terms of formal education as compared to those of extra-regional migrants and, above all, *Riberalteños* (Table 5-8). Only with respect to primary education, the former's enrollment reaches levels similar to the children of extra-regional migrants or *Riberalteños*. For the time being, only very few children of ex-forest dwellers have attended or even completed the secondary course, let alone higher studies. Their dramatic drop out rates at the level of primary education were attributed to indifference (*desinterés*) on the part of the parents and/or the children (56%), the economic situation (20%), migration (16%), lack of teachers (4%), and sickness (4%). Interestingly, school abandonment during the secondary course was attributed even more exclusively to indifference (78%), regardless of the parents' group of origin. Only future studies can reveal if children who arrived from the countryside at the early school age may progressively catch up with their counterparts from outside the region or Riberalta. Lower drop out rates among *Riberalteño* children and their elevated attendance of higher education show that the younger generation in town not only faces better educational perspectives but seeks to make use of them.

Migratory patterns among peri-urban households

Migration is not a recent phenomenon in the northern Bolivian Amazon. On the contrary, a high degree of geographical mobility has long been characteristic of the regional population (CIDOB 1979: 207, Romanoff 1992: 122). It therefore does not come as a surprise that migrant households contribute a significant share to the population at Riberalta's periphery. Since the term '*Riberalteño*' as defined for the purpose of this study also comprises persons

who have not been born in Riberalta but who have lived here for at least the last twenty years, the true magnitude of migration might appear somewhat concealed. In fact, 41% of the household heads sampled have been born in Riberalta[553] but a mere 25% have lived in town without ever out-migrating for a certain period of time. In other words, almost half the Riberalta natives have spent more than a year outside Riberalta at least once in their life.[554] Frequent shifts of residence are inseparably interwoven with the regional population, involving both rural and urban dwellers irrespective of their place of birth and the places where their 'formative years' were spent (Table 5-9).

Table 5-9 Mean length of residence (in years) of heads of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and settlement type.

Residence / Group of origin	Urban area		Independent community	*Barraca*	*Estancia*
	Total urban	Riberalta only			
Ex-forest dwellers	13.5 (±8.5)	9.2 (±4.5)	7.8 (±10.9)	18.7 (±14.6)	1.7 (±4.4)
Extra-regional migrants	29.2 (±14.6)	11.1 (±10.7)	3.1 (±6.9)	0.2 (±0.8)	5.6 (±12.0)
Riberalteños	32.7 (±10.5)	27.2 (±12.7)	1.8 (±4.6)	0.6 (±2.5)	0.2 (±0.9)
Total	**25.3 (±13.7)**	**18.7 (±13.4)**	**4.2 (±8.2)**	**7.2 (±12.6)**	**1.4 (±5.1)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: Urban residence is divided into the total number of years spent in towns and/or cities and those spent in Riberalta (RIB). *Estancia* refers to a cattle ranch. *Barracas* constitute the only settlement type exclusively encountered in northern Bolivia whereas the other types exist inside and outside the region. Standard deviation in parentheses.

The sample population has a highly varied background in terms of residential history and related migratory patterns (Table 5-9). Irrespective of the group of origin, the majority of household heads (64.2%) has lived in the rural areas during one phase of their life, if not repeatedly. Across the whole sample, the heads of household spent half of their life in Riberalta and one-third in the rural areas, reflecting the strong rural roots of the peripheral population. This also points to the rural-urban links that tie Riberalta to its hinterland in various ways, as we have seen before and will further see below. By definition, *Riberalteños* have had the least exposure to the rural areas but those among them who resided in the countryside (40.3%) opted for an independent community rather than a *barraca* or *estancia*. Extra-regional migrants, on the other hand, comprise two distinct groups, viz. urban-urban migrants with a background in a departmental capital outside the region; or rural-urban migrants from the Beni plains south and southwest of the region where cattle ranching prevails. In socio-cultural terms, most of the former are *kollas*, that is chiefly of *Aymara* or *Quechua* origin, whereas the latter tend to be *cambas* who share many characteristics with the 'traditional' population of northern Beni and Pando. Finally, ex-forest dwellers are the only group which exhibits a strong past on the *barracas* where many of them have spent most of their lifetime. At the same time, quite a few ex-*barraca* residents have lived in an independent

[553] Among their spouses the share of Riberalta natives is 53 percent.

[554] Migration in this section, unless otherwise noted, does not include seasonal migration – for example to participate in the Brazil nut harvest or, in former years, to tap rubber on a *barraca* for half a season (*medio fábrico*) – but refers to migratory moves covering periods of no less than a year.

community before further migrating to Riberalta. It is therefore of interest to establish the type of settlement from where the new arrivals ultimately migrated to Riberalta (Table 5-10).

Table 5-10 Type of place of origin of migrant heads (n=90) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, before their last move to Riberalta; by group of origin.

Type of last place of origin	#	Ex-forest dwellers	Extra-regional migrants	*Riberalteños*
Barraca	29	21	1	7
Estancia	5	3	1	1
Granja	4	1	1	2
Independent community	13	10		3
Rural sub-center	16	6	1	9
Regional town	10	2	2	6
Extra-regional town or city	13	1	8	4

Source: Own data from Peri-Urban Household Survey 1998.

Note: *Granja* is a small or medium-size farm typically in the vicinity of an urban center. Rural sub-centers are 'independent communities' but they have been grouped separately to elucidate their importance with respect to urbanward migration. 'Regional town' here refers to Cobija or Guayaramerín, while 'extra-regional town or city' comprises the cities of La Paz, Santa Cruz, Cochabamba, and Oruro, and the towns of Trinidad, Rurrenabaque, Puerto Maldonado (Peru), as well as two unknown urban places in Rondônia (Brazil).

Among the migratory fraction of the sample population, the sending areas are highly varied and differ considerably according to the group of origin (Table 5-10). Following Bogue's (1963) argument of origin selectivity in relation to 'push' and 'pull' factors, we can view this low general selectivity with respect to the place of origin as a strong rural 'push', probably rooted in the rubber crisis. This, however, is but one aspect of the phenomenon in question which basically applies only to ex-forest dwellers. Their vast majority originated from rural settlements where tapping rubber had once been vital, viz. *barracas*, independent communities and, to a lesser extent, rural sub-centers. Since the latter category includes sub-centers outside the region[555] and hence beyond the natural distribution of the rubber tree, part of the migrants from there, along with those from *estancias* and *granjas*, must have migrated for other reasons, as did urban-urban migrants (25.6%). It is especially the extra-regional migrants who exhibit high selectivity with regard to their place of origin, thereby indicating the strong stimulus of the urban 'pull' exerted by Riberalta. The existence of this group underpins the town's functioning as an economic growth pole within a largely disadvantaged region. In fact, many of the extra-regional migrants are *kolla* merchants who seek out new economic opportunities in a region that had long been cut off from the rest of the country. *Riberalteños*, in turn, are characterized by less origin selectivity, but their places of origin give little further weight to the dominant 'rural-push-through-rubber-crisis' hypothesis. Rather, they show that the rural sub-centers are an important intermediary stop on the way

[555] These extra-regional rural sub-centers are chiefly located in the savanna region south of the study area; they comprise Reyes, Puerto Cavinas, and Santa Rosa (Ballivián Province of the Beni Department), as well as Santa Ana (Yacuma Province of the same department) and San Buenaventura (Iturralde Province, La Paz Department).

(back) to Riberalta.[556] Before we have a closer look at the 'push' and 'pull' factors underlying migration decisions (Table 5-12), we shall scrutinize the related types of migration.

Migratory patterns among Riberalta's peripheral population are far more complex than hitherto anticipated. Rather than linear urban-urban or rural-urban population movements, the majority of peri-urban households is characterized by multiple, often circular, migratory moves. If simply accounting for the sequence of residential stays in urban and rural areas, 26 migratory patterns can be distinguished. The most common among them are 'no migration' (25.0%), rural-urban (15.8%) and urban-urban migration (9.2%). These straightforward patterns, however, account for less than half of the total. They are followed by more complex movements such as urban-rural-urban (7.5%), rural-rural-urban (6.7%), rural-rural-rural-urban migration (5.8%), to name but the most common among the remainder. A further discrimination between regional and extra-regional towns and the different types of rural settlements involved – *barracas*, independent communities including rural sub-centers, *estancia*s and *granjas* – yields as much as 60 types of migratory patterns. In other words, on average there are no more than two households that share a similar migration history.[557] On aggregate level, eight types of migration can be distinguished (Table 5-11).

[556] Among the immigrants from a rural sub-center, most of the ex-forest dwellers (83.3%) came from within the region, whereas the extra-regional migrant household and many *Riberalteños* (77.8%) emigrated from outside.

[557] It goes beyond the scope of this chapter to give a detailed account of such moves. To name but one example: one of the most complex migration histories is that of Petronila Manu: born on a *barraca* in Pando, she moved at the age of six with her parents to Riberalta; after three years they left for another *barraca* where P. Manu experienced her formative years. Once she got married, she followed her husband to a new *barraca* but due to problems with the patron they left after a while to settle in a rural sub-center. Due to family problems they returned to Riberalta and looked after someone's house for four years. Given the lack of own property they settled again on a *barraca*, but as soon as the gold rush set in she joined her husband to an independent community on the Madre de Dios River. Once the rush was over they returned to Riberalta where she lives now separated from her husband. Based on the criteria established in Table 5-2, P. Manu was grouped as an ex-forest dweller despite the fact that she had been living twice in Riberalta before her latest arrival.

Table 5-11 Migratory patterns among peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin.

Type of migration	#	Ex-forest dwellers	Extra-regional migrants	*Riberalteños*
No migration	30			30
Complex linear rural-urban migration	26	22	4	
Simple linear rural-urban migration	19	4	1	14
Complex urban-rural-urban migration	13	8		5
Linear urban-urban migration	11		5	6
Non-linear rural-urban migration	10	5	3	2
Circular migration via rural area	9	5		4
Circular migration via urban area	2		1	1

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'Complex linear rural-urban migration' stands for a sequence of one or more rural places, followed by residence in one or more urban places, before migrating to Riberalta; 'simple linear rural-urban migration' denotes the direct move from a rural settlement to this town; 'complex urban-rural-urban migration' refers to a migratory process that commenced in one or more towns, continued in one or more rural places, and ended in Riberalta; 'linear urban-urban migration' means direct immigration from another town or city to Riberalta; 'non-linear rural-urban migration' encompasses several moves back and forth between rural and urban areas; 'circular migration via rural area' is the move from Riberalta to a rural settlement and back; 'circular migration via urban area' denotes the move from Riberalta to another urban place and back.

The migratory histories of Riberalta's peripheral population defy a simple classification scheme. In Section 4.1 we have already referred to Kasarda and Crenshaw (1991: 475) who stress the evidence of a complex set of migration streams in the South. But categories such as urban-urban, rural-rural, and circular migration which according to them predominate in many Third World countries, are still too broad to adequately reproduce this complexity. I suggest to allow for the high heterogeneity of migration streams by distinguishing eight types of migration (Table 5-11). Among these, complex patterns, such as 'complex linear rural-urban migration', 'complex urban-rural-urban migration', or 'non-linear rural-urban migration' are in the minority but they involve 54.4% of the migrant population. The remaining four types of actual migration are dominated by 'simple linear rural-urban migration', i.e. the type that many would expect to prevail in northern Bolivia, though it makes up for only 21.1% of the migratory patterns encountered. Of course, there is a strong tendency to leave the rural areas for an urban living. It should also be borne in mind that patterns such as 'complex urban-rural-urban migration' entail many household heads of today whose parents had been in town by chance, if not deliberately, upon the former's delivery but moved (back) to the forest soon after. This is one of the reasons why even long-term Riberalta dwellers encompass more migrants than people native to the town who had never outmigrated so far. This migrant fraction among the *Riberalteños*, which has spent at least the last twenty years in town, is dominated by those who immigrated directly from their rural place of birth.

Ex-forest dwellers, who in their majority have arrived over the past five to fifteen years, exhibit more complex patterns: 92% of them have lived in rural settlements other than their

place of birth – 57% even in three or more rural places – and 19% have dwelled in at least one more urban center before they arrived at Riberalta. Moreover, 30% of the ex-forest dwellers were born in town, in particular in Riberalta, then outmigrated to spend a notable part of their life in the rural areas before returning to Riberalta; but only 11% can be considered simple return migrants following the pattern 'Riberalta-one rural place-Riberalta', while more than 18% have lived in several rural and/or urban places prior to their return. Similarly, extra-regional migrants reveal in their majority (57%) more complex migratory patterns, though their single strongest group (33%) comprises natives of Cochabamba, La Paz, Santa Cruz, and Trinidad who moved straight to Riberalta. In summary, ex-forest dwellers are the most mobile group; they have made 3.0 (±1.3) migratory moves on average, followed by extra-regional migrants [2.1 (±1.1)] and *Riberalteños* [0.9 (±1.3)].

The high complexity of migratory patterns prompts the question for the underlying motives of migration. We have seen earlier that this is one of the questions most frequently asked but probably least satisfactorily answered in the literature on migration. In some instances, the respondents themselves faced difficulties to distinguish between 'push' and 'pull' factors of migration when asked separately about their motives to leave a given place and those for migrating to Riberalta. This was frequently due to the fact that migratory motives entail factors that exert both 'push' and 'pull'.[558] Typical examples are military service, low educational and health facilities in the countryside but more of their kind in town, or few job opportunities in the rural as compared to the urban areas. In general, migratory motives were found to be as complex as migratory patterns. Evidently, a variety of reasons are at play, often in combination, such that more than twenty types of motives could be distinguished. For the sake of simplicity and in order to permit comparability, I largely followed the list of motives put forward by Verheule (1998: 43) when classifying the motives (see Table 5-12).

[558] For example, one respondent who originates from an indigenous community was asked to be its representative in Riberalta; he put 'being elected community representative in Riberalta' as the motive for leaving his community and 'new work' as the reason for migrating to Riberalta. This case was consequently grouped under work as a typical 'push *and* pull' factor.

Table 5-12 'Push', 'pull' and combined factors of migration (in percent) among peri-urban households randomly sampled in Riberalta, northern Bolivia: comparison of 1996 and 1998 surveys in seven peripheral neighborhoods.

'Push' factors	S98	S96	'Push *and* pull' factors	S98	S96	'Pull' factors	S98	S96
Tired of living in the rural area	10.8	9.4	Education of children / studies	21.6	19.6	Reunion with family members	5.4	7.7
Low rubber price	6.8	5.1	Work	10.8	10.3	Learn to know Riberalta	1.4	5.1
Other *barraca*-related problems	9.5	n.a.	Health problems	2.7	2.6	Other	8.1	6.0
Other family-related reasons	14.9	n.a.	In company of parents[559]	8.1	22.2	Unknown	n.a.	12.0

Source: 1998 survey data (S98) from *Los Almendros*, *Villa Don Carlos*, *1° de Diciembre*, and *San Juan* from own Peri-Urban Household Survey (n=120); 1996 survey data (S96) from *Pueblo Nuevo*, *Verdolago*, *El Cerrito*, and *San Juan* (n=117) from Verheule (1998: 43).

Note: 'Other *barraca*-related problems' comprise a patron's abandonment of his *barraca*, problems with the patron himself or with other *barraca* residents, and overpriced foodstuffs. 'Other family-related reasons' refer to the death of a family member, problems within the family, and independence sought from the parents. 'Other' motives include, *inter alia*, military service or an own house in Riberalta. Slight divergences of the percentages are due to rounding. Some categories do not apply to either of the surveys (n.a.).

Motives of urban-urban and rural-urban migration to Riberalta are highly diverse but lack an unambiguous picture as to whether 'push' rather than 'pull' factors govern migratory decisions (Table 5-12). To a certain extent, the decision whether to consider a factor exerting 'push' or 'pull' is arbitrary, and the fact that the migrants themselves do not follow a clear-cut scheme in this respect warrants to concentrate on the global picture. It is striking to what extent the motives concur between the two surveys despite their slightly diverging categories.[560] Another remarkable feature is the fact that, contrary to popular belief, the latest rubber crisis is far from figuring prominently under the motives reported to have spurred urbanward migration. Nevertheless, the rubber crisis might well be a factor concealed in categories such as 'in company of the parents', 'reunion with family members', 'work', or 'tired of a rural living' ("*cansado de vivir en el campo*") (cf. Verheule 1998: 44). But the fact remains that in the collective memory of Riberalta's peripheral population the rubber crisis does not hold the same importance it is ascribed to by both the governmental and non-governmental sector in northern Bolivia.

Both the Village Survey addressed in Chapter 4 and the Peri-Urban Household Survey unmistakably reveal that the single most important motive for the rural exodus are lacking educational facilities in the countryside (see Table 4-6 in Section 4.4). But it is also a host of motives *within* a given family or household that have a bearing on migratory decisions. Thus, external factors such as the slack rubber market or poor educational and health facilities are

[559] This motive refers to times when today's household heads were children upon their parents' migratory moves. Verheule (1998: 43) regards a child's move in company of its parents as a 'pull' factor. However, since infants and children below the age fifteen can hardly be expected to live on their own in the place of origin, I prefer to group it under 'push *and* pull' factors.

[560] If merging, for example, the factors 'in company of parents' and 'other family-related reasons' under 'family reasons', no significant discrepancy remains, save for the 12% unknown motives in the Verheule study.

not *per se* more important than internal factors like problems within the family, death of a family member, or family reunion. There is also little evidence that the frequently cited wage differential between the rural and urban areas constitutes a major factor of migration in northern Bolivia. Though it is indirectly touched upon in the categories 'work' and 'low rubber price', its overall importance seems rather negligible. A rural living has at least one prominent advantage over that in an urban center: there are few restrictions to base livelihood strategies on (subsistence) agriculture, limiting the need for cash income to those goods and services that cannot be produced by the rural household itself (Stoian, in prep.). This is a crucial factor often overlooked in (econometric) studies on migration which are based on the wage-differential thesis.

Likewise, the second great theme in the migration literature, viz. agricultural involution, is not the point at stake in northern Bolivia. Limitation of farm land exists only in the vicinity of town but there are ample opportunities to get hold of a parcel in the more remote independent communities. It is true that rural laborers can be considered landless when living on a *barraca* – despite the fact that only in extremely rare cases they are still prohibited to work their own agricultural plot – but they are definitely not pushed to town in view of limited farm land, as the literature suggests. Whoever emigrates from a *barraca* principally is free to establish in an independent community (see Chapter 4 and Stoian, in prep.). In summary, the motives to migrate to Riberalta entail a complex set of adaptive responses to crisis *and* the personal decision to seek out new opportunities within existing networks of family and kinship relations, or, at times, explicitly beyond such ties.

In the introductory section we put emphasis on the finding that one of the few differentials, if not the only, that exists with respect to migration streams is that of age. Does migration in northern Bolivia also select younger household heads aged roughly between fifteen and thirty-five, as could be anticipated? Surprisingly, most of the literature available makes no distinction between a household's different times of arrival at a given place. The vast majority of studies thus supposes migration to be a singular linear event. We have seen that this is not the case in Riberalta where 23.3% of the immigrants are second, and 3.3% third, arrivals. It is therefore necessary to distinguish between the first and the last time of arrival (Table 5-13).

Table 5-13 Age-at-time-of-arrival cohorts of immigrants to Riberalta: age of migrant household heads (n=90) upon their arrival at Riberalta, based on a random sample of 120 households in four peripheral neighborhoods of Riberalta, northern Bolivia (in percent).

	0-4 years	5-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years
First arrival	18.9	16.7	16.7	27.8	11.1	7.8	1.1
Last arrival	7.8	14.4	15.5	35.6	17.8	7.8	1.1

Source: Own data from Peri-Urban Household Survey 1998.

Note: The figures refer to today's household heads, but these immigrants were not necessarily household heads upon their arrival to Riberalta. Slight divergences are due to rounding.

Two aspects are striking when establishing age-at-time-of-arrival cohorts (Table 5-13): first, the findings lend support to the thesis that migration tends to select young adults (cf. Williamson 1988: 431). Persons who migrated at the ages between twenty-five and thirty-four clearly dominate among the immigrants and, combined with those between fifteen and twenty-four, constitute around half of the migrants upon their last arrival; only about a fourth of the immigrants were at the age thirty-five or above. Second, the distinction between the first and last arrival exhibits that those with circular migratory patterns often arrived for the first time in company of their parents, then outmigrated when seeking independence from them, but returned as young household heads, in particular at the ages between twenty-five and thirty-four.[561] Without overstating the argument, it seems that the collective memory of Riberalta's peripheral population involves a more or less prolonged stay in the rural areas (*campo*), serving as a 'rite of initiation' for those who return to the urban realm. While age-at-time-of-arrival cohorts provided us with insight on individual migration histories, time-of arrival cohorts help elucidate collective patterns of migration (Table 5-14).

Table 5-14 Time-of-arrival cohorts of immigrants to Riberalta, by the years of first and last arrival of migrant household heads (n=90) at Riberalta (in percent); based on a random sample of 120 households in four peripheral neighborhoods of Riberalta, northern Bolivia.

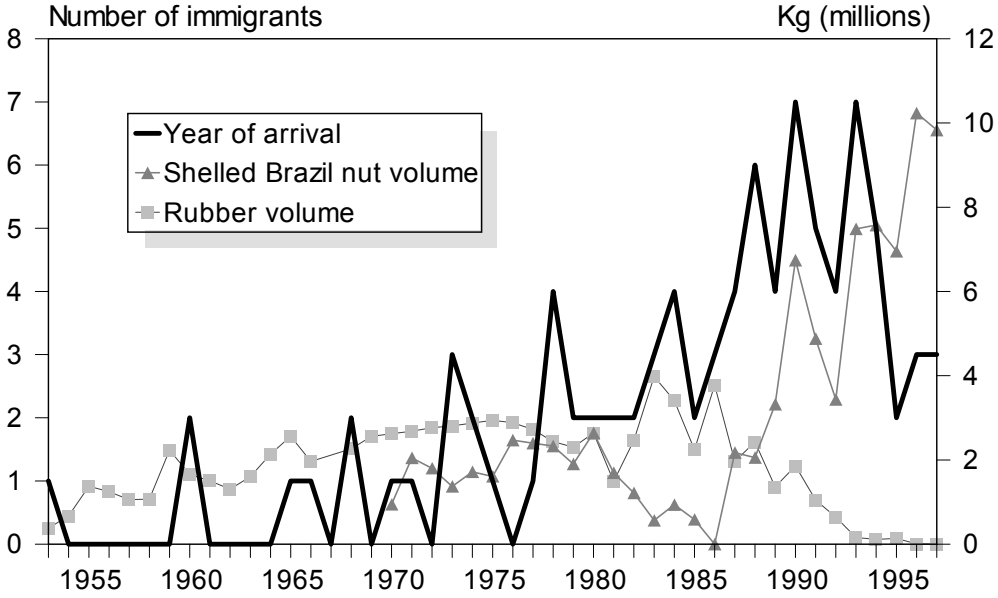
	1938-42	1953-57	1958-62	1963-67	1968-72	1973-77	1978-82	1983-87	1988-92	1993-97
First arrival	1.1	5.6	4.4	5.6	4.4	12.2	13.3	15.6	25.6	12.2
Last arrival	–	1.1	2.2	2.2	4.4	7.8	13.3	17.8	28.9	22.2

Source: Own data from Peri-Urban Household Survey 1998.

Typically, time-of-arrival cohorts are understood as referring to the last arrival (Browning and Feindt 1971: 49). But we have seen before that the distinction between first and last arrival proved insightful as regards multiple migration patterns. In our case, the share of immigrants in the first-arrival cohorts exceeds that of the last-arrival cohorts for the periods prior to 1967 (Table 5-14). This points again to the phenomenon mentioned above: one-sixth of today's migrant household heads experienced their first arrival to Riberalta as children in company of their parents. But only one-third of them remained in Riberalta while the remainder left once more, either in company of their parents or precisely when seeking independence from them. A good number of them returned in later years, reflected in the pronounced discrepancy between first and last arrivals in the period 1993-97. These last years show an elevated share of second or third arrivals compared to previous periods. When focussing on last arrival, it becomes evident that little more than half the immigrants arrived only over the past decade, in particular during the period 1988-1992. This suggests yet again a connection with the latest rubber crisis; this hypothesis can be tested by plotting the number of migrants by year of last arrival against the production volume in the Brazil nut and rubber industries (Figure 5-1).

[561] Another point merits attention: the age groups 0-4 and 5-14 point to 'in company of parents' as underlying motive of migration. When adding the percentages of these groups regarding their last time of arrival (Table 5-13) we attain 22.2%, i.e. exactly the same percentage that Verheule (1998: 43) found under the motive 'in company of parents' (Table 5-12). In contrast, our own survey yielded only 8.1% under this category. The discrepancy is most likely due to the respondents' endeavor to elucidate the motives of their parents at the time of the move. This should be taken into account when comparing the findings of the two surveys.

Figure 5-1 Immigration to Riberalta in the context of the rubber decline and the concurrent boom in the Brazil nut industry: number of migrants by year of last arrival of the household heads at Riberalta, drawn from a random sample among peri-urban households (n=120) in four peripheral neighborhoods of Riberalta, northern Bolivia, and plotted against the volume of rubber produced in the rural areas as well as the volume of shelled nuts produced in the urban area, in particular Riberalta.



Source: Migration data from Peri-Urban Household Survey 1998; export volume of rubber and Brazil nut from Comité Cívico de Riberalta (1972), López (1993), CNF (1997), Banco Santa Cruz (1998) and Pacheco (1998).

Note: No data available for the volume of shelled nuts in the period 1953-1969, nor for rubber in 1967.

Both Figure 5-1 and statistical tests give further weight to the hypothesis that the recent population increase in Riberalta can, to a degree, be attributed to the rubber decline. Taking the official rubber export volume as a proxy of overall rubber production and assuming a strong correlation between the latter and the job opportunities available in the rural areas, we can detect a negative correlation between rubber production and the number of immigrants, in particular over the past decade or so (Figure 5-1). In fact, the highest negative correlation (r^2=-0.52)[562] between these two variables exists for the period 1983-1993. This seems to underpin the rural 'push' exerted by the rubber decline. But even more so, immigrants were attracted by the concurrent boom in the Brazil nut industry and the related increase in urban employment opportunities. We have seen in Section 3.3.1 that the shelling industry is the single largest employer in Riberalta. As about 70-80 percent of the industry's production capacity is installed in this town, and given its spin-off effects on other branches of the economy (Bojanic, in prep.), we can adopt the volume of shelled nuts produced in northern Bolivia as a proxy of job opportunities provided in Riberalta. The years with the highest positive correlation (r^2=0.79) between the number of arrivals and the output in the shelling industry embrace the period 1982-1994. Thereafter, the correlation diminishes significantly, indicating that the trends became independent from each other. Two conclusions can be drawn from these findings. First, the rubber 'push' should not be viewed in isolation. Rather,

[562] Here and elsewhere, r^2 refers to the Pearson Correlation Coefficient.

the combined effect of the rubber industry in crisis and the dramatic expansion of employment opportunities in the shelling industry exerted both 'push' and 'pull'. Besides, these effects leveled off after 1993/94 when the pool of potential migrants had so strongly been drained that immigration dropped to the levels prior to the rubber crisis (see Chapter 4 and Stoian, in prep.). Second, though the ups and downs in northern Bolivia's extractive economy doubtlessly had a strong bearing on recent migration, they are not its sole motives.

We should not overstate the outcome of our statistical exercises linking migration with the booms and busts in the Brazil nut and rubber industries, as expanding or reducing the periods with the highest positive or negative correlation by only one or two years yields far less significant results. It should also be borne in mind that the number of immigrants in any given place has a certain concentration over the past fifteen years or so because earlier immigrants are more likely to have died in the meantime. In addition, both the rural and urban population is subject to 'natural' population growth, as a result of which the overall population tends to become 'younger'. In view of this population change, and given that most migrants are young adults, it is but logical that the absolute number of migrants is highest over the past ten to fifteen years. In order not to succumb to an illusory correlation, we should not put too much emphasis on the impact the rubber crisis might have had on migratory patterns (cf. Verheule (1998: 44). Especially over the past years the timeless factors of urbanward migration came again to the forefront, viz. the search for better access to educational and health facilities, the general expectation of better job opportunities, and a host of motives related to the family. Moreover, in addition to their complex set of migratory patterns between rural and urban areas, peri-urban households reveal frequent moves within the city limits (Table 5-15).

Table 5-15 Intra-town relocations of heads of randomly sampled households (n=120) in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and zone of residence [viz. the *zona negra* (zn), that is the area prone to flooding along the Beni river, the core area (ca), the semi-periphery (sp) and the periphery (p)].[563]

Group of origin	1st place				2nd place				3rd place				4th place			
	zn	ca	sp	p	zn	ca	sp	p	zn	ca	sp	p	zn	ca	sp	p
Ex-forest dwellers																
Households (%)	21	**48**	18	14	9	16	16	**43**	5	5	5	**20**	–	5	–	**11**
Duration of residence (yr.)	7	5	7	7	5	4	6	4	5	6	5	4	–	2	–	3
Extra-regional migrants																
Households (%)	7	**71**	14	7	7	14	21	**43**	–	–	7	**21**	–	–	–	–
Duration of residence (yr.)	24	8	3	2	5	5	7	4	–	–	4	3	–	–	–	–
Riberalteños																
Households (%)	27	**60**	13	–	5	24	31	**40**	2	3	13	**34**	–	–	3	**5**
Duration of residence (yr.)	23	19	17	–	13	9	8	4	9	6	11	5	–	–	8	2

Source: Own data from Peri-Urban Household Survey 1998.

Note: Percentages only add up to 100 (save for slight divergences due to rounding) in case of the first place as not all households made a move to a second or further places; moreover, two columns are missing for the two households that now reside in their fifth and sixth place, respectively. Highest percentage in each cell in bold type.

Only a minority of peri-urban dwellers (8%) has still been living in the first place where they settled upon their arrival to Riberalta (Table 5-15).[564] This group comprises household heads whose average age (46) clearly exceeds that of people who have moved more frequently (37). The vast majority of Riberalta's peripheral population has moved at least once within the town limits, with many residing in their second (49%) or third (33%), if not their fourth place (8%); one percent each even occupied their fifth and sixth place, respectively. Unlike the residentially stable households mentioned above, the number of moves among the more mobile population is not related to the age of household heads. But the group of origin does play a role: *Riberalteños* and ex-forest dwellers constitute a more mobile urban population than extra-regional migrants, with their mean number of intra-town moves amounting to 1.6, 1.4 and 1.1, respectively.[565]

Across the groups of origin there is a prevailing geographic pattern with respect to these moves: today's peri-urban dwellers tend to have first settled in the central parts of town – more than half of them embarked from the town's core area and little less than one-fourth

[563] For the purpose of this study, the zones were defined as follows (cf. Verheule 1998: 34): the ***zona negra*** includes *Puerto Beni Mamoré, Puerto Capitanía* and *Puerto Pilas;* the **core area** encompasses *Flor de Mayo, Casco Viejo, San José, Bolital, Marconi, San Antonio, Base Aérea, La Chonta, San Francisco, Conavi,* and *Santa Rosa de Lima*; the **semi-periphery** consists of *Pueblo Nuevo, Barrio Unido, 6 de Julio, El Sol, 25 de Marzo, 1° de Septiembre, Los Almendros, Abaroa, Periodista, Petrolero, Palmar,* and *S.A.I.;* the **periphery** includes *El Cerrito, 1° de Diciembre, Cuernavaca, San Juan, Los Tajibos, Villa Camino, Verdolago, Villa Británica, Villa Don Carlos, Palmera,* and *Centenario.*

[564] Among these 'first-place dwellers' there are seven ex-forest dwellers and two extra-regional migrants but no *Riberalteños*.

[565] Difference between the two migrant groups cannot be explained by diverging lengths of residence in Riberalta, as both the first and last years of arrival – in case of multiple migratory movements – do not differ significantly.

from the *zona negra* – before they move, often via the semi-periphery, to the periphery (Table 5-15). This is particularly interesting in case of the ex-forest dwellers, as popular view holds that such migrants immediately inhabit the town's periphery. In fact, only one-third of them does while the remainder is pulled to the core area or to the *zona negra*. It is here where the majority can install themselves with members of the same kinship or family who have arrived earlier or are native. From these areas they tend to move more quickly to the next place as compared to extra-regional migrants and, evidently, *Riberalteños*. The few households (6%) that directly settled at the periphery belong to the poorest income section of the sample, a fact that will be discussed in more detail in the next section.[566] It needs to be stressed that intra-town relocations all were made in addition to the migratory movements described earlier.

While the *zona negra* is highly prone to inundation and other disasters (fire, landslides[567]), the core area exhibits the best infrastructure in terms of roads, electricity, potable water, local government facilities, etc. Why do most of the households then proceed from here via intermediate stops at the semi-periphery to the periphery? The chief explanation is that their majority was lacking own property in the core area and, upon seeking independence from their parents (in case of many *Riberalteños*) or other family members (in case of many migrants), they opt for the cheaper lots or houses at the town's (semi-)periphery: the motives for intra-town relocation are want of own house (52%), disasters (15%), independence from family (13%), work or studies assumed in a more distant place (9%), problems with family members or neighbors (9%), and economic needs, such as debts or lack of solvency (2%). The high percentage of 'disasters' refers exclusively to the *zona negra*. Though all of its residents are aware of the risks of a life within the reach of the Beni River, this zone continues to have a strong appeal on both new arrivals and the younger families from Riberalta itself: the average duration of residence is conspicuously high among *Riberalteños* and extra-regional migrants, and even ex-forest dwellers seem not in a rush to leave. The reasons are obvious: low prices of houses and plots, and this in the direct vicinity of the town's central area, along with the opportunity to tap 'free' power from the nearby mains.

In summary, typically none of the factors underlying urbanward or intra-town moves is sufficient to explain the migratory behavior of a given household. In the vast majority of cases it is a host of necessary factors that in their combination cause a household to move. Non-economic factors seem to dominate both urbanward migratory moves and intra-town relocations in northern Bolivia.[568] Arguably, economic factors are implicitly at play when somebody is 'tired of a rural living' or when somebody moves away from the *zona negra* because of recurrent 'disasters'. Likewise, the desire for a house of one's own is not purely non-economic, as it may also be driven by the wish to avoid rental expenses or to curb the economic dependence on family members. But the general picture is that the decision to move within the town roots largely in personal aspirations and touches upon various facets of family and kinship relations. Similarly, the urbanward move of rural out-migrants is strongly governed by the wish to better the lot of their children through improved access to (higher) education. The distinction between economic and non-economic, or collective and personal, forces in migration decisions, as suggested by Gugler (1969: 134), becomes finally blurred

[566] None of the *Riberalteños* first settled on the town's periphery; this does not come as a surprise as Riberalta's periphery of today was virtually non-existent at the time when they were reared in one of the *barrios*.
[567] The menace on the Beni floodplain is twofold: in addition to recurring inundation, the *zona negra* is prone to landslides at the precipice (*derrumbe del barranco*), in particular in a small belt that marks the transitional zone to the town's upland core area where the steep bank of the river is subject to abrupt soil movements.
[568] This is in contrast, for example, to findings from sub-Saharan Africa and elsewhere where the predominant cause of rural-urban migration was found to be economic (Gugler 1969: 137, Gilbert and Gugler 1992: 67).

when taking into consideration that at the sub-household, or individual, level the driving forces may even be more varied and complex. But it will be the task of further studies to shed more light on migratory patterns of individuals or sub-household collectives.

Income formation among peri-urban households

When determining household income it is of importance to define what kind of income is of interest (Wollenberg and Nawir 1998: 158). Unless marked otherwise, all income reported here is gross income, i.e. "revenues less cash costs" (ibid.: 159).[569] Income-in-kind was taken into account when its value assumed significant portions, e.g. as part of a *habilito* arrangement, or reimbursement-in-kind of employees in the processing plants for Brazil nut (*beneficiadoras*).[570] Smaller transactions involving the provision of agricultural produce were disregarded. For example, peri-urban households might receive a sack of manioc from relatives in the countryside upon the latter's visit to town. In these cases, the transaction is characterized by reciprocity, as the relatives can expect free food and accommodation.

Most income is derived from (monthly or casual) wages, as the vast majority of peri-urban dwellers has no profession that would guarantee a regular salary: out of the total of 120 household heads sampled, 112 declared that they have no formal profession; the remaining heads comprise three mechanics, two teachers, a military man, a civil engineer, and a nurse. Similarly, out of the total of 101 spouses 93 are without a formal profession; the remaining spouses include three teachers, two secretaries, a nurse, and a woman running a beauty shop. In order to identify occupational specialization, I followed the sector classification of the National Census 1992 (INE 1992e) which was also drawn on by Verheule (1998: 55) (Table 5-16).

[569] Net income is defined as revenues less cash and imputed costs; the latter are costs that reflect losses to income but do not take the form of cash expenses for a given time period. This may include the depreciation of equipment, the value of unpaid labor or the opportunity cost of production materials (ibid.). As this type of costs is largely irrelevant to the households in question, it is warranted to refer to gross incomes unless deemed necessary in specific cases.

[570] Most of the *beneficiadoras* (88%) run their own shop (*pulpería*) (Coesmans and Medina 1997: 153) where employees can purchase foodstuffs at market prices. As these purchases are deducted from the piece-rate wages they need to be treated as income-in-kind.

Table 5-16 Sector distribution of the labor force among randomly sampled households (n=120) in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and sex, compared to the distribution in the whole of Riberalta in 1992.

	Ex-forest dwellers		Extra-regional migrants		*Riberalteños*		Men total	Women total	Total	RIB 1992
	♂ n=39	♀ n=24	♂ n=13	♀ n=5	♂ n=56	♀ n=31	♂ n=108	♀ n=60	n=168	
Extractivism/ agriculture	**64.1**	4.2	15.4	–	21.4	3.2	**36.1**	3.3	24.4	9.4
Mining[571]	–	–	–	–	1.8	–	0.9	–	0.6	2.5
Industry	5.1	**54.2**	7.7	**40.0**	14.3	**45.2**	10.2	**48.3**	**23.8**	**35.2**
Construction	17.9	–	23.1	–	**23.2**	3.2	21.3	1.7	14.3	6.2
Commerce	2.6	8.3	–	**40.0**	3.6	9.7	2.8	11.7	6.0	15.3
Services	7.7	33.3	23.1	20.0	21.4	38.7	16.7	35.0	23.2	24.0
Transport/repair	2.6	–	**30.8**	–	14.3	–	12.0	–	7.7	7.4
Total	100	100	100	100	100	100	100	100	100	100

Source: Own data from Peri-Urban Household Survey 1998, except for the National Census data 1992 for Riberalta (RIB) (INE 1992e, cited in Verheule 1998: 55).

Note: Highest percentage in each column in bold type.

Across the groups of origin and sex, three sectors are of equal importance with respect to the occupational structure among peri-urban households, viz. extractivism/agriculture, industry, and services (Table 5-16). In the first sector, extractive activities clearly outweigh those in agriculture and they constitute an almost exclusively male domain; industry, services, and commerce, on the other hand, are dominated by economically active women.[572] In their case, 'industry' mainly refers to work in the *beneficiadoras*, while 'service' encompasses laundering, sewing, and a variety of public and other private services. Compared to the 1992 data for Riberalta as a whole, one fact stands out, viz. the far higher importance of activities related to extractivism or agriculture in the peripheral neighborhoods. It needs to be stressed that these refer exclusively to the gathering of NTFPs and, to a far lesser extent, agricultural production, whereas the processing associated is grouped under 'industry'.[573] A sector underrepresented at Riberalta's periphery is commerce, as the central market and many stores and warehouses are located in the town's central area. Occupations related to construction, though, are more important at the periphery, as the huge casual labor force available here guarantees a steady and cheap supply for the sector, which benefits from the boom in the Brazil nut industry and, more importantly, from 'Japanese' remittances. [574]

[571] Mining refers to gold exploitation which experienced a rush in the late 1980s and early 1990s (see section 3.6) but has diminished significantly since. Both in terms of occupation and value it is rather negligible today.

[572] There are no housewives among the female household heads, but the majority of spouses of the male-headed households (52.5%) reported to be housewife.

[573] On the other hand, entries for industry have been higher in the 1992 survey. Though it is true that forest product extraction plays a less important role in the town's central areas which have been included in the 1992 survey, it is likely that at least part of the engagement in extractive activities was grouped as 'industrial occupation' due to its close connection with the Brazil nut and palm heart industries.

[574] Between 1500 and 2000 young men from Riberalta and its surroundings who are of Japanese descent are currently working in Japan (see Van Beijnum 1996: 28); they transfer an estimated US$12 million annually to their families in Riberalta (Caballero and Eduardo 1996a: 47), equivalent to US$570 per month and family.

Probably there are few non-Amazonian places where activities related to the gathering and processing of NTFPs rank so prominently among the occupations of peri-urban dwellers. But even inside Amazonia, the high contingence on NTFP-related activities is surely the exception rather than the rule. In this context, we can detect a clear distribution of labor according to sex. Among the ex-forest dwellers, male household heads predominantly engage in forest product extraction, while their spouses and female household heads provide a high share of laborers to the *beneficiadoras* and, to a lesser extent, the service sector. Extra-regional migrants, which obviously have been less exposed to the NTFP sector, rather engage in transport, services, and construction when male, or in industry and commerce when female. The *Riberalteños*, on the other hand, show the least occupational concentration among men, whereas *Riberalteñas* tend to work in the *beneficiadoras* or in the service sector. Though occupational specialization differs among economically active women according to the group of origin, their choices are generally limited: they work in the Brazil nut industry as *quebradoras* (38.3%) and graders (*clasificadoras*)[575] (10%), or as a laundress (13.3%), seamstress (5.0%), teacher (5.0%), or nurse (5.0%), if not as a street vendor (11.7%).

It proves again worthwhile to compare the results of our survey to that of Verheule (1998). He made three observations with respect to the differences between the groups of origin: "First, forest migrants [i.e., ex-forest dwellers] are more concentrated in agricultural and extractive activities than non-migrants[576] and extra-regional migrants. Second, extra-regional migrants, women in particular, cluster slightly in commerce and services. Third, *Riberalteños* seem not to be concentrated in specific sectors. Except a modest concentration of non-migrants in transport, *Riberalteños* are fairly spread across the sectors" (ibid.: 55). To a great extent, our findings confirm those of Verheule, allowing to make broader generalizations about the population at Riberalta's periphery.[577] One of the few exceptions, which is also partly surprising, is the low representation of 'transport' in our survey though it concurs with that of the 1992 Census. Every person familiar with Riberalta knows about the high prevalence of motorbike taxis. In 1996, their number was estimated at 1500 which were run by some 800 permanent taxi drivers (Van Beijnum 1996: 28). The greater part of *mototaxistas*, however, involves casual drivers and this might be the best explanation why the transport sector, which is generally dominated by taxi drivers (Verheule 1998: 64), seems underrepresented in our sample.[578] In fact, many peri-urban dwellers, men more often than women, engage in a variety of economic activities throughout the year. This detail cannot be allowed for in the listing of

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Most of the recipients are among the better-off and renowned families in Riberalta's society who live in the central area.

[575] Next to the shelling process, the grading of shelled nuts absorbs most of the female labor force in the *beneficiadoras*. Five qualities are distinguished (Coesmans and Medina 1997: 154, 162-3): 1st quality (whole nuts), 2nd quality (chipped), 3rd quality (broken but more than the half), 4th quality (broken and less than the half), and 5th quality (rotted); the first class (*enteras*) is graded according to size: (large, medium, small, midget and tiny). While the first three classes are used for alimentation, the 4th quality is used for cooking oil and the 5th quality for the production of soap.

[576] Verheule (1998) interchanges the term 'non-migrants' with '*Riberalteños*'.

[577] Verheule (1998: 55) mentions these shares per sector: extractivism/agriculture (18.5%), mining (1.0%), industry (31.0%), construction (9.5%), commerce (8.0%), services (20.5%), and transport/repair (11.5%).

[578] Verheule (1998: 65) points to another two types of *mototaxistas*: those with private bikes and those with rented ones. The latter type prevails though incomes when accounting for rental costs, the expenses for gasoline, and perhaps the repair of a puncture – there a dozens of repair shops along the main roads who live on that – rarely exceeds Bs.30 (roughly US$6) a day. The great advantage of renting a bike and working casually as a *mototaxista* lies in its ease of entry: virtually at any time of the year an underemployed man can turn into a *mototaxista* and earn a modest income with a job that requires little skills but only a lot of patience. However, it should also be mentioned that this job may turn out in a dangerous occupation, as especially in less populated areas and during the nighttime the taxi drivers run the risk to be mugged, if not assaulted.

the sectoral distribution which needs to be based on the respondents' principal occupation. The general picture, though, goes unchallenged: similar to the demography and residential histories of Riberalta's peripheral population, its occupational specialization depicts the crucial importance of activities that are rooted in the rural areas, in particular the gathering of NTFPs. If we also account for their processing in urban-based plants, the 'NTFP sector' makes up the single most important source of employment and occupation at Riberalta's periphery. Evidently, this has fundamental implications for household income portfolios, as will be addressed in the following sections. But before we turn to the detailed breakdown of income sources, we shall briefly get an overview on the general distribution of income according to income ranks (Table 5-17).

Table 5-17 Total income (TI) and per capita income (PCI) quintiles (with 1 representing the upper quintile and 5 the lower quintile) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin (in percent).

Income quintile	1		2		3		4		5	
Group of origin	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**
Ex-forest dwellers	13.6	2.3	18.2	25.0	20.5	25.0	18.2	20.5	29.5	27.3
Extra-regional migrants	42.9	50.0	28.6	14.3	21.4	14.3	7.1	21.4	–	–
Riberalteños	19.4	25.8	19.4	17.7	19.4	17.7	24.2	19.4	17.7	19.4

Source: Own data from Peri-Urban Household Survey 1998.

Note: Percentages refer to each type of income per line; slight divergences are due to rounding. If income would be evenly distributed, each cell would be assigned 20.0%.

Two types of income ranks are distinguished: income quintiles of total household income and those of per-capita income (Table 5-17). The former are an indicator of the households' general economic weight, whereas the latter are a better proxy for their specific performance and the amount of income actually available per household member. Extra-regional migrants dominate the highest income ranks, in particular as far as total income is concerned; around half of them are represented in the highest quintile but none of them in the lowest. In contrast, ex-forest dwellers, though rather well represented in the medium ranks (quintiles 2-4), are more concentrated toward the lower income end; in terms of per-capita income they are virtually absent from the highest rank. *Riberalteños*, in turn, are rather evenly distributed across the ranks, covering the whole income spectrum of the sample.

Rural income

One of the central issues when discussing rural-urban links is the urban dwellers' dependence on income generated in the rural areas. In the case of northern Bolivia, rural income comprises chiefly that from forest product extraction – Brazil nut, palm heart, and timber (in this order) – and, to a limited extent, agriculture-based income. It has been shown that seasonal migration, in particular the temporary move to the *barracas* to participate in the Brazil nut harvest, is an integral component of rural livelihood strategies (Stoian, in prep.). It is equally crucial for many peri-urban dwellers as reflected in their average rural income and the mean number of months they spend in the countryside (Table 5-18).

Table 5-18 Average periods household heads and their spouses annually spend in the rural areas, and mean absolute and relative rural income of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin.

	Mean duration of rural stay (months per year)		Rural income (Bs.)	Rural income (in percent)
	♂	♀		
Ex-forest dwellers	3.3 (±3.4)	1.2 (±1.5)	4066 (±4148)	32.2 (±33.2)
Extra-regional migrants	3.5 (±3.1)	0.6 (±1.2)	6938 (±21,530)	10.8 (±29.1)
Riberalteños	2.7 (±3.2)	1.1 (±2.0)	3190 (±6529)	20.1 (±31.5)
Total	**3.0 (±3.3)**	**1.1 (±1.7)**	**3948 (±8947)**	**23.5 (±32.4)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: Share of rural income in percent of total household income. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation in parentheses.

In the sample population, about one-fourth of the total household income is generated in the rural areas (Table 5-18), above all through forest product extraction, but also through own agricultural production or agricultural wage labor. Little less than half the households (45%) dispose of rural income, 18% rely for more than half of their total earnings on it, and as much as 9% generate their entire income in the rural areas. The last group comprises households of virtually all income ranks, ranging from those of patrons who rely for all their income on their *barracas* or *granjas* (n=2), to pure extractivists who generate their entire income through the exploitation of Brazil nut, palm heart, and timber (n=6). Among the latter, all but one are ex-forest dwellers who, except for a recent arrival, have been living in Riberalta between seven and sixteen years. In general, the relative weight of rural income is highest among ex-forest dwellers where it makes up for one-third of the total income. Even *Riberalteños* derive one-fifth of their total income from the rural areas. Only among the extra-regional migrants, rural income is generally of low importance despite the high average computed (note the high standard deviation): a mere 2 out of the total of 14 households in this category rely on rural income though in their case it is much higher than average.[579] Extra-regional migrants spend roughly as much time in the rural areas as ex-forest dwellers or *Riberalteños*, albeit for different reasons: while the former work in the rural areas as military man, construction worker, or contractor, their counterparts engage in the extraction of Brazil nut, palm heart, or timber, or likewise work as contractors in the related industries.

Temporary population shifts in search for rural income stand primarily for male migration as documented by the relatively short periods women spend in the rural areas. Female stays in the countryside are largely confined to the Brazil nut harvest when between 30 and 40 percent of the wives of those who participate in the *zafra* accompany their spouses to the rural

[579] One extra-regional migrant worked as a contractor (*contratista*) in the palm heart industry where he had a net income of Bs.78,000 (Bs.0.5 per palm heart) through the sale of 156,000 palm hearts in 1997, in addition to Bs.2031 as a net income from Brazil nut sales. The other one worked as a rural broker (*rescatador*) in the Brazil nut industry, having a net income of Bs.17,100 (Bs.19 per box) through the purchase and sale of 900 boxes of Brazil nut in 1997.

areas.[580] But the general picture is that the majority of male household heads (61.1%) seasonally migrates to the rural areas whilst most of their spouses (65.3%) remain with the children in Riberalta so as not to compromise the latter's (secondary) education and their urban-based economic activities.[581] Rates of absence among the male labor force, i.e. in our case the number of months annually spent in the rural areas to generate income, might be an indicator of wealth: low-income households are expected to spend more time away from their residence than those who are better-off (Stier 1983: 9). Is this also true in northern Bolivia (Table 5-19)?

Table 5-19 Mean duration of rural stay (in months per year) of heads of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and income quintiles [with 1 representing the upper quintile and 5 the lower quintile of total income (TI) and per capita income (PCI), respectively].

Income quintile	1		2		3		4		5	
Group of origin	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**
Ex-forest dwellers	5.0	0	2.4	3.2	4.2	4.5	3.4	2.2	1.5	2.5
Extra-regional migrants	4.2	3.6	1.5	0	3.7	3.0	3.0	4.7	–	–
Riberalteños	4.7	4.3	2.7	2.1	2.3	1.5	1.7	2.4	1.7	2.1
Total	**4.6**	**3.9**	**2.4**	**2.4**	**3.2**	**3.0**	**2.4**	**2.6**	**1.6**	**2.3**

Source: Own data from Peri-Urban Household Survey 1998.

In contrast to what the literature suggests, the length of the seasonal stay in the rural areas is not a general indicator of wealth as expressed in income. Actually these two variables are independent save for the *Riberalteños* for whom a certain correlation exists (Table 5-19). But contrary to prediction, the length of the rural stay is inversely proportional to the total income and per-capita income ranks. Since such a correlation does not exist for the two other groups of origin, we can conclude that seasonal migration to the rural areas does not occur because of lacking income alternatives for low-income groups in town. Rather, it is part of the overall livelihood strategy of a given household, involving both economic and non-economic factors. Peri-urban dwellers, above all ex-forest dwellers, have strong, also emotional, bonds with the forest and, of course, with kinship and family members who continue to live there. It is common, for example, that rural dwellers call their urban-based relatives when their own labor is not sufficient to secure the Brazil nut harvest or that of agricultural crops. The majority of the sample population thus pursues livelihood strategies that entail a rural stay, although the shares of rural income vary widely across groups of origin and income ranks (Table 5-20).

Table 5-20 Rural income as share of total income of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and income quintile [with 1 representing the

[580] These shares are dependent on the Brazil nut prices paid in a given year: in 'high-price years' such as 1997 and 1998, 39% and 41%, respectively, of the spouses accompanied their husbands. In 1999, however, female participation (30%) diminished as a consequence of a severe drop of Brazil nut prices.

[581] Among the female household heads, 25% reported to annually spend some weeks or months in the rural areas. Among their male counterparts, temporarily absent household heads account for 64.3% of the extra-regional migrants, 63.6% of the ex-forest dwellers, and still as much as 51.6% of the *Riberalteños*.

upper quintile and 5 the lower quintile of total income (TI) and per capita income (PCI), respectively].

Income quintile	1		2		3		4		5	
Group of origin	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**	**TI**	**PCI**
Ex-forest dwellers	28.5	0	40.6	47.0	43.4	24.5	29.6	33.8	28.3	33.4
Extra-regional migrants	25.2	21.6	0	0	0	0	0	0	–	–
Riberalteños	31.2	32.3	12.9	12.5	17.8	18.1	15.5	8.9	24.7	23.9
Total	**29.0**	**27.8**	**20.0**	**27.3**	**25.2**	**19.5**	**19.5**	**17.1**	**26.7**	**28.7**

Source: Own data from Peri-Urban Household Survey 1998.

As for the duration of the rural stay, there is no clear-cut picture of the rural income percent across income quintiles (Table 5-20). In other words, low-income households do not rely to a greater extent on rural income than better-off households. Trends exist, however, as regards the group of origin. Ex-forest dwellers exhibit relatively high shares of rural income across all quintiles save for the first per-capita income quintile in which the only household represented does not rely on rural earnings. This is largely due to the former's higher engagement in extractive activities (see Table 5-27). Extra-regional migrants, as mentioned above, are basically independent from rural income except for the two household heads working as rural brokers in the Brazil nut and palm heart industries. Among the *Riberalteños*, the rural income percent increases both at the top and the bottom end of income quintiles. While the top end includes the relatively high incomes of three *barraqueros*, the bottom end represents the importance of income from gathering Brazil nut and palm hearts for low-income households. Economic factors were elsewhere found to play a major role in tying urban-low income earners to their rural areas of origin (see Gugler 1969: 146), but this finding needs to be modified for northern Bolivia in that even better-off households[582] rely to a considerable extent on rural income (Table 5-21).

[582] Arguably, the residents at Riberalta's periphery could generally be regarded as low-income groups, but this notion would fail to acknowledge the considerable variation that exists among them.

Table 5-21 Mean annual rural income (in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and per-capita income quintile (with 1 representing the upper quintile and 5 the lower quintile).

Income quintile / Group of origin	1	2	3	4	5
Ex-forest dwellers	0	6700 (±5718)	4000 (±4076)	4308 (±4089)	2786 (±3513)
Extra-regional migrants	13,876 (±29,860)	0	0	0	–
Riberalteños	7592 (±11,177)	2117 (±3728)	2288 (±2779)	975 (±1899)	1345 (±1881)
Total	**9108 (±18,060)**	**4041 (±5180)**	**2882 (±3474)**	**2103 (±3269)**	**2065 (±2853)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: One *boliviano* (Bs.) was about US$0.19 at the time of the survey. Standard deviation in parentheses.

Rural income varies across groups of origin and per-capita income quintiles (Table 5-21). In the highest income quintile, a small group of extra-regional migrants (n=2) and a larger group of *Riberalteños* (n=7) generate a significant part of their total income in rural areas; the remainder of these two groups of origin has only low to moderate rural income. In contrast, this type of income reaches substantial levels for most ex-forest dwellers regardless of their income rank. Rural income is derived from extractive activities rather than agriculture, as we shall see below (see also Table 5-27).

Extractivism

Two activities stand out with regard to forest product extraction involving peri-urban households, viz. the gathering of Brazil nuts and palm hearts. Other extractive activities, such as timber extraction, collection of palm leaves for roof thatch, or hunting and fishing are important in individual cases but do not contribute to peri-urban income on a broad scale.[583] Without doubt, participation in the annual Brazil nut harvest is the single most important extractive activity at Riberalta's periphery. The prevailing picture is that low-income groups face little alternatives but to participate in the strenuous *zafra* despite its low returns. It is held, for example, that 37% of 35 (out of a total of 120) sample households participating in the *zafra* 1993/94 returned with "no or a negative saldo" (Assies 1997: 54). Before scrutinizing thus general claims we shall briefly turn to the actual participation rates in the extraction of Brazil nuts and palm hearts, and in the related processing (Table 5-22).

[583] The three households involved in timber sales all are *Riberalteños*: one owner of a parcel in a community and one *barraquero* earned Bs.6000 and 2200, respectively, through the sale of timber from their properties. One chainsaw operator (*motosierrista*) specialized on timber extraction reported a timber-based income of Bs.25,000.

Table 5-22 Rates of involvement of peri-urban households in Riberalta, northern Bolivia, in the extraction of Brazil nuts and palm hearts, and related processing in Riberalta-based plants, 1995-1999.

	1995	1996	1997	1998	1999
Participation in the Brazil nut harvest	29%	43%	32%	38%	28%
Employment in a Brazil nut factory	n.d.	n.d.	32%	28%	n.d.
Participation in palm heart extraction	n.d.	8%	16%	n.d.	n.d.
Employment in a palm heart factory	n.d.	n.d.	1%	1%	n.d.

Source: 1995 data from Assies (1997: 53), 1996 data from Verheule (1998: 56, 59), 1997-99 data from own Peri-Urban Household Survey 1998/99; n=120 in each survey.

Note: With the Brazil nut harvest lasting from December to March, 1995 refers to the *zafra* 1994/95, 1996 to the *zafra* 1995/96, and so on; for given years no data are available (n.d.).

Across neighborhoods and years, participation in the Brazil nut harvest involves about one-third of Riberalta's peri-urban households (Table 5-22). Though this data draws on three different surveys which are only partly comparable,[584] they show a clear trend: participation in extractive activities fluctuates considerably over the years, both at aggregate and individual level (see Table 5-23), whereas employment in the processing plants is relatively stable. As income derived from work in the *beneficiadoras* will be addressed in Section 5.4.2, we shall focus on that derived from extraction here. It would be misleading to associate fluctuating participation levels with shifts between the products extracted. Gathering Brazil nuts is an activity confined to the rainy season, whereas palm heart extraction has turned into the major dry-season extractive activity since the rubber collapse.

Many households seem to decide at short notice whether or not to participate in the *zafra*. The actual price paid on a *barraca* is the key determinant for this decision: for the period 1997-1999, for which data is available from the same households, there is a high correlation between the rate of participation and the negotiated minimum price.[585] The actual Brazil nut price ranked first when inquiring the non-participants about their motives not to partake in the *zafra* 1998/99: low Brazil nut price (32.8%), dislike of that kind of work (25.4%), high risk involved (11.5%), secure job in Riberalta (9.8%), sickness of a household member (9.0%), problems with settling a positive balance (5.7%), taking care of small children (1.6%) or of the house (1.6%), low advance payment[586] (1.6%), and recent death of the household head (0.8%). When combining the motives 'dislike of that kind of work' and 'high risk' and relating them to the whole sample, exactly 30% of the peri-urban household heads and their spouses

[584] The methodology applied by Verheule has been described above; that of Assies remains unclear safe for the fact that 120 households were sampled in "some 'marginal' neighborhoods" in December 1994 (1997: 53, 82).

[585] Given the short time span, the high correlation coefficient (r^2=1.0) is only of limited validity though. As Table 3-1 shows, the minimum price negotiated between the Labor Inspectorate, ABAN, and the *Federación de Zafreros* is largely equivalent to the actual price paid on the *barracas*.

[586] It is surprising that this motive was hardly mentioned. In fact, the average amount of advance paid to a *zafrero* rose from Bs.980 in the *zafra* 1996/97 to Bs.1170 in 1997/98 but dropped sharply to Bs.410 in 1998/99.

share a generally negative image of the work involved in the *zafra*. This is not as many as might be expected, indicating that even among the non-participants there is a relatively high number of potential *zafreros* who would principally participate in the Brazil nut harvest, in particular if the prices were sufficiently high. Patterns of participation and the functions assumed during the *zafra* are highly diverse and merit closer attention (Table 5-23).

Table 5-23 Participation and functions in the Brazil nut harvests (*zafras*) 1996/97-1998/99, and pertaining mean total and per-capita income quintiles (with 1 representing the upper quintile and 5 the lower quintile), of heads of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia.

***Zafra* 1996/97 (moderate price)**	***Zafra* 1997/98 (high price)**	***Zafra* 1998/99 (low price)**	**n**	**Mean total income quintile**	**Mean per-capita income quintile**
No participation	No participation	No participation	66	3.0	2.9
Zafrero	*Zafrero*	*Zafrero*	12	2.8	3.3
Zafrero	*Zafrero*	No participation	11	3.5	3.2
No participation	*Zafrero*	*Zafrero*	5	3.8	4.0
No participation	*Zafrero*	No participation	5	3.8	3.4
No participation	No participation	*Zafrero*	3	4.0	4.0
Granjero	*Granjero*	*Granjero*	3	2.7	3.0
Contractor	Contractor	Contractor	3	1.3	3.0
Zafrero	No participation	No participation	2	4.0	3.5
No participation	No participation	Contractor	2	3.5	4.0
Barraquero	*Barraquero*	*Barraquero*	2	1.0	1.0

Source: Own data from Peri-Urban Household Surveys 1998/99.

Note: Functional patterns of six households which were represented only once are omitted for the sake of clarity. *Granjero* here refers to a *zafrero* who gathers nuts on his own parcel and sells them at the price of the free market. Minimum Brazil nut prices per box on a *barraca* were Bs.18-20 (*zafra* 1996/97), Bs.23-25 (*zafra* 1997/98), and Bs.15-17 (*zafra* 1998/99).

The comparison of functional differences with respect to the participation or non-participation in the Brazil nut seasons 1996/97-1998/99 is very instructive for two reasons. First, this is the first longitudinal set of data available, as Assies (1997) and Verheule (1998) each have referred to a single season. Second, pronounced price fluctuations over these years allow to distinguish low-, moderate-, and high-price *zafras* (Table 5-23). It is striking that functional changes apart from 'participation/non-participation' are largely absent: contractors continue as contractors, *granjeros* remain *granjeros*, and *barraqueros* do not cease to be *barraqueros*[587]. This does not mean that there is no change whatsoever. We encountered two cases of a *zafrero*-turned-contractor and a contractor-turned-*zafrero*, indicating that shifts occur especially between these two groups. Far more frequent, though, are shifts between

[587] As mentioned above, the sample population comprises three *barraqueros*. In Table 5-23, only two of them are listed as the third one did not exploit his *barraca* in 1998/99 given the low Brazil nut price.

participation and non-participation in the *zafra*, prompting the question what determines the related decisions in addition to the motives already mentioned.

The most common pattern encountered was participation in none of the *zafras* (55%), which was highest among extra-regional migrants (78.6%) and *Riberalteños* (64.5%) but much less pronounced among ex-forest dwellers (34.1%). In other words, almost half the households surveyed participated in at least one of the three seasons. The pool of would-be *zafreros* is probably as high as 65-75 percent. Among those who principally participate, *zafreros* who partook in all the harvests prevail (22.2%), closely followed by those who participated in both 1996/97 and 1997/98 (20.4%). Interestingly, there is no noteworthy differential in terms of total or per-capita income rank between the latter groups of participants and that of non-participants. On average, they all pertain to the medium-income group of the sample population. This is particularly striking, as it is commonly held that whoever is economically in the position to do so avoids the strenuous Brazil nut harvest.

While participation in the *zafra* is not confined to the lower income levels, we can observe what seems to be 'irrational' behavior, i.e. participation in the low-price season but non-participation in the medium-price and/or the high-price season. Such behavior concerns 10% of the overall sample, or 22.2% of those who basically participate in the Brazil nut harvest, and it precisely comprises the households which pertain to the lower or lowest income quintiles. In their case, participation in the *zafra* functions as a 'safety valve', providing this low-income group with the opportunity for cash income – part of which is paid immediately in the form of an advance – at the end of a given year. This is particularly important around the time of Christmas when the whole town prepares for the celebrations, when families get together, and when nobody wants to be second to his neighbor. The best opportunity for the low-income group is then to join a contractor or patron to a *barraca*, irrespective of the Brazil nut price. The most 'irrational' behavior, though, i.e. participation in the low-price season 1998/99 and non-participation in the moderate- and high-price seasons before, was observed only in five cases. In summary, most of those who principally participate in the Brazil nut harvest can make choices in that they inscribe with a contractor or patron when prices appear lucrative, or engage in urban-based economic activities when this is not the case.

Participation rates also vary according to the consolidation of neighborhoods: they are lowest in *Los Almendros* (20% on average), moderate in *Villa Don Carlos* (27%) and San Juan (29%), and highest in *1° de Diciembre* (56%). Verheule (1998: 88) also found that participation increased with decreasing age of the *barrio*. In his survey, the younger *barrios* showed a relatively high percentage of young inhabitants, prompting him to hypothesize that increasing age lowers the motivation to participate in the Brazil nut harvest due to the high demands on physically fitness (ibid.). But we found no evidence for this hypothesis. On the contrary, compared to the respective non-participants, household heads participating in the *zafras* 1996/97 to 1998/99 were more than five years older on average. This should not be interpreted as indication for a generally higher appeal of the Brazil nut harvest among the older residents of the peripheral neighborhoods. Rather, it reflects the high percentage of ex-forest dwellers among the latter's population, whose male household heads are about five years older on average than their counterparts among the *Riberalteños* (see Table 5-5). It is therefore the group of origin rather than the age of a peri-urban resident that has a bearing on the likelihood to participate in the *zafra*.

Another important aspect, both in terms of income and employment, is whether a *zafrero* goes to the *zafra* on his own or in company of other household members. In earlier surveys, the

rate of males going on their own was determined at 51% for the *zafra* 1994/5 and 30% for the *zafra* 1995/96 (Verheule 1998: 88-9).[588] Verheule finds no explanation for this discrepancy, but our longitudinal series allows us to determine the correlation between the minimum price for Brazil nuts, the general participation rate and that of sole-male participation. For the *zafras* 1994/95-1998/99, the rate of sole-male participation was inversely proportional to the minimum price of Brazil nuts on a *barraca* (r^2=-0.64), or to the general rate of participation (r^2=-0.83). In other words, the higher the minimum price paid on a *barraca* the higher the general participation in a *zafra*, and the higher the rate of spouses and children who accompany the household head. The amount of Brazil nuts gathered not only varies over the years but also according to the number of gatherers per household (Table 5-24).

Table 5-24 Mean annual output of Brazil nuts (in boxes) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by number of gatherers per household participating in the Brazil nut harvest.

Gatherers per household	*Zafra* 1996/97			*Zafra* 1997/98			*Zafra* 1998/99		
	n	mean	StDev	n	mean	StDev	n	mean	StDev
1	11	137	(±59)	12	156	(±73)	17	116	(±61)
2	19	172	(±59)	27	171	(±60)	8	181	(±56)
3, 4, or 5	3	243	(±144)	3	229	(±91)	4	218	(±126)
Total	**33**	**167**	**(±78)**	**42**	**171**	**(±67)**	**29**	**149**	**(±67)**

Source: Own data from Peri-Urban Household Survey 1998/99.

Note: Standard deviation (StDev) in parentheses; one box of Brazil nuts weighs 22-26kg.

Even when the entire household leaves for the *zafra,* only a relatively small number of members is actively involved in the harvest. Over three Brazil nut seasons, the average number of gatherers per household varied within the small margin of 1.7 to 1.8, with only ten percent of the participating households having three or more gatherers at their disposal. Output levels are rather stable over the years except for single gatherers in the *zafra* 1998/99. Their relatively low production can be associated with their short stay in the *zafra* (67 days), as compared to 87 days and 90 days the two seasons before.[589] Typically, the household head gathers on his own or he is assisted by his spouse.[590] Production per capita is highest when a male gathers on his own, as on average a second person increases the output by no more than 10-56 percent (Table 5-24): a gatherer, if accompanied by his spouse, can dedicate his entire work force to the Brazil nut harvest while his wife may help out some hours a day but is principally in charge of looking after the children, cooking, and doing the laundry. Only in the few cases in which a young couple has left without children or when two males are collaborating, output may rise up to the double. The decision to go on one's own or in company roots largely in non-economic factors, above all company and child care. It has to be

[588] For the *zafra* 1994/95, Verheule quotes an unpublished working paper of Assies (1996: 12).

[589] Those who were assisted by other household members in 1998/99 remained for 76 days and hence likewise for less time than the two *zafras* before (80 days and 91 days, respectively).

[590] In the *zafras* 1996/97, 1997/98 and 1998/99, the rates of household heads gathering solely were 33%, 29% and 59%, respectively; the rates of household heads assisted by their spouses amounted to 42%, 45% and 31%, respectively. The remainder was made up by household heads assisted by household members other than the spouses, in particular adolescent children.

borne in mind that expenses for the costly foodstuffs and basic supplies on the *barracas* rise according to the number of persons. In years with unfavorable prices like in 1998/99 this can even result in lower absolute gains of two-person teams as compared to single gatherers.[591]

Participation in the Brazil nut harvest is not a mere matter of economically surviving three months of the year or, worse, working off debts from the *zafra* before, but a fairly remunerative activity for most of the gatherers (Table 5-25): in the *zafras* 1996/97, 1997/98, and 1998/99, their vast majority had a positive balance upon return from the forest, with those facing a negative balance (*saldo en contra*) amounting to a mere 5.3%, 4.3%, and 3.0%, respectively. These shares are even below the 14.0% reported from the *zafra* 1995/96 (Verheule 1998: 88). This clearly contradicts the impressionistic accounts of pervasive indebtedness among those who gather Brazil nuts on a *barraca*.[592] Nonetheless it is worthwhile to examine why a *zafrero* might not reach a profit or even return indebted. The following reasons were reported for premature departures from a *barraca*, or overly long stays there, which often underlie a negative balance:[593] low Brazil nut production in a given locality (68.2%), illness of the gatherer and/or accompanying household members (11.4%), lack of transportation[594] (11.4%), being satisfied with a settled balance[595] (2.3%), lack of foodstuffs (2.3%), death of a family member (2.3%), and child care (2.3%). This basically confirms the findings of an earlier survey according to which illness of the collector and disappointing amounts of Brazil nuts in the place of collection account for most debts (Verheule 1998: 88). The paramount importance of the actual Brazil nut production is somewhat surprising. Certainly, Brazil nut production in a given place is subject to natural fluctuation[596], but it is primarily a matter of organization how many *zafreros* are actually sent to a given area.[597] It appears that both contractors and patrons are primarily concerned with securing as much raw material as possible, even if they compromise the *zafreros*' earnings by recruiting more gatherers than actually needed. This is one of the manifold reasons why the *zafreros* face comparatively modest earnings relative to independent gatherers, contractors, or patrons (Table 5-25).

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[591] In the *zafra* 1998/99, the net income of a two-person team – i.e. after deducting all expenses on the *barraca* – was 19% below that of single gatherers. In contrast, in the *zafras* 1996/97 and 1997/98 the former's net income was 67% and 34%, respectively, more than that of single gatherers. It seems that those who worked on their own in 1998/99 sought to drastically curb their expenses in view of the low Brazil nut price, an endeavor difficult to accomplish for couples with children that need to be fed.

[592] Our figures and those of Verheule (1998: 88), all based on stratified random sampling, are in sharp contrast to the 37% cited earlier from Assies (1997: 54). The huge discrepancy cannot be explained by vastly differing *barraca* prices of Brazil nuts or foodstuffs which might result in more negative balances. What might have caused the high percentage of 'no or a negative saldo' in Assies' study is the fact that not all contractors settle the accounts within two weeks after the arrival at Riberalta, as stipulated by the Labor Inspectorate. It may take several months until a *zafrero* is finally paid the balance between the amount of Brazil nuts covered by the *habilito* and the amount he actually delivered. In some cases, the *zafreros* are not paid at all, which altogether might lead to excessive 'no saldo' reporting where actually the positive balance has not (yet) been settled.

[593] The motives are based on the accumulated answers (n=44) with respect to the *zafras* 1996/97-1998/99, whereby multiple denominations were possible.

[594] It is not uncommon that *zafreros* have to remain on a *barraca* even several weeks after the termination of the Brazil nut harvest because of lacking transportation. This causes further expenses for the costly foodstuffs without the option for additional earnings.

[595] It is not uncommon that *zafreros* gather no more than the amount of Brazil nuts stipulated through the *habilito*.

[596] On a local scale Brazil nut stands are reported to peak in production every two to three years, but on a regional scale production levels are fairly constant.

[597] During the actual Brazil nut harvest next year's production can be estimated by counting the young fruit pods which are already visible given that they need 14 to 16 months to mature.

Table 5-25 Mean gross income (GI), expenses (EXP), and net income (NI) of participants in the Brazil nut harvests 1996/97-1998/99 among peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by type of participant (in Bs.).

Type of participant	*Zafra* 1996/97			*Zafra* 1997/98			*Zafra* 1998/99		
	GI	EXP	NI	GI	EXP	NI	GI	EXP	NI
Zafrero (n=22-34)	3472	2109	1363	3798	2371	1427	2408	1426	982
Granjero (n=3)	5800	1967	3833	9367	2067	7300	3883	1850	2033
Contractor (n=5-6)	2538	1127	1411	4059	1549	2510	4185	1300	2885
Patron (n=2-3)	8194	1570	6624	13,950	2117	11,833	5150	1972	3178

Source: Own data from Peri-Urban Household Survey 1998/99.

Note: *Granjero* here refers to a person who gathers nuts on his own parcel and sells them at the price of the free market. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; n varies according to the *zafra*.

Benefits from the Brazil nut harvest chiefly accrue to the patrons and, to a lesser extent, to contractors, and dependent or independent gatherers (Table 5-25). Gross income, expenses, and net income vary considerably over the years, reflecting how dubious it is to draw conclusions from studies referring to a single year. Across all the groups involved,[598] both gross and net income are directly proportional to a given year's raw material price. At a first glimpse this is not astonishing, but it indicates that low prices are generally not offset by expanded production. On the contrary, patrons, dependent and independent gatherers reduce (slightly) their output as prices drop. The only exception are contractors who react by recruiting more *zafreros* in order to make up for the lower prices. This group is highly contingent on the reliability of the *zafreros* they recruit. Though their gross gain has risen from Bs.1-1.5 to Bs.2-3 per box of Brazil nuts over the past years, contractors are also held responsible for the losses that may occur. This is why their actual net income may be lower than that of independent gatherers who can sell at the rate of the free market without facing the former's risks.[599]

It needs to be stressed that the small sample representation of patrons, contractors, and independent gatherers, or *granjeros*, allows only cautious generalizations. Evidently, the net income of *granjeros* and patrons is far more variable over the years than that of dependent gatherers or *zafreros*. The latter show the most regular production levels, averaging between

[598] Two groups which are also stakeholders in the Brazil nut harvest are absent from these reflections, viz. the owners of the processing plants and transport agents. None of the former and only one of the latter were represented in our sample. For more detailed information on these groups, see Bojanic (in prep.).

[599] Just to give a short example: a contractor recruits ten *zafreros* who can reasonably be expected to gather 1500 boxes of Brazil nuts, translating into a theoretical net income of Bs.3750 when assuming a reward of Bs.2.5 per box, and when not accounting for the boxes the contractor is likely to gather himself. Given that each *zafrero* was paid an advance of Bs.1000 and allowing for the fact that around two out of ten *zafreros* receive an advance without finishing their job (Domínguez 1994: 13), the contractor's actual net income easily diminishes by more than a half.

152 and 176 boxes per household and season. Interestingly, when raw material prices rise, *zafreros* cannot increase their net gain significantly despite relatively stable output levels, since *barraca* prices for foodstuffs rise accordingly and/or participants afford more 'luxurious' goods such as tin food or alcoholic drinks. On the other hand, the severe drop of Brazil nut prices in the *zafra* 1998/99, though reducing the *zafreros*' gross income by 37% compared to the *zafra* before, did 'only' translate into a 31-percent drop of net income as prices of foodstuffs diminished as well.[600] Certainly, it makes a difference whether the *zafreros* suffer a net-income loss of Bs.500 in a low-price *zafra*, or whether the patrons earn even thousands of *bolivianos* less without being seriously affected.

The majority of *zafreros* (62%) derived a net income of Bs.500-1500 in the low-price *zafra* 1998/99, rising to Bs.(700)800-2000 in the moderate- or high-price *zafras* in 1996/97 and 1997/98, respectively; still, those who returned with a net income of less than Bs.1000, made up 67%, 54% and 38%, respectively. Unless we talk of a high-price *zafra* we are tempted to think that the participation in the Brazil nut harvest hardly pays off for the majority of *zafreros*. Whether this is truly the case can only be determined by comparing alternate sources of income that are actually available to them. We have seen earlier that the vast majority of peri-urban dwellers of the economically active age lack a profession or permanent employment. As many of them have to rely on the casual labor market, the daily wage (*jornal*) they typically earn can be compared to their daily income from gathering Brazil nuts. In the low-price *zafra* 1998/99, at a time when the daily wage excluding food (*jornal seco*) was at Bs.25, the average gross income of a *zafrero* was Bs.41 per day,[601] or 1.6 times the daily wage. As foodstuffs and basic supplies in the rural areas, in particular those on the *barracas*, are more expensive than in town,[602] a *zafrero's* economic return after deducting related expenditures amounted to a mere Bs. 17, as compared to Bs.20 as a daily wage including food. This appears far less favorable to the *zafreros*, but it needs to be taken into account that these economic returns are not tantamount to the net income from gathering Brazil nut, as they allow for *all* expenses in the rural area, including the food and other basic necessities of accompanying household members. In contrast, the daily wage of Bs.20 involves only food for the laborer. Assuming household food expenses of Bs.10 per day, which rather underestimates the actual expenses, we realize that the net ratio between Brazil nut returns and income from casual labor is far more favorable than appears at a first glimpse; even more so when prices rise: in the moderate and high price *zafras* 1996/97 and 1997/98 – when the *jornal seco* was at Bs.18 and 20, respectively – mean daily gross income from

[600] In view of a 25-percent drop of Brazil nut prices on the world market in September 1998, raw material prices in Bolivia were adjusted accordingly. In order to compensate the *zafreros* for the more than 30-percent price drop of Brazil nuts gathered on a *barraca*, the tripartite agreement stipulated that the six most important food items (rice, flour, salt, sugar, cooking oil, salt-dried meat) were to be sold on the *barracas* at the Riberalta price, and not as usually at a rate inflated by 20-30 percent to account for transport costs. But it is also likely that the *zafreros* sought to cut down their *barraca* expenses for foodstuffs and basic necessities in anticipation of the lower returns for the Brazil nut harvest.

[601] Daily gross income from gathering Brazil nuts was derived by assuming six working days per week during the period spent in the *zafra,* for Sundays are typically used for leisure activities. This is even an underestimation as *zafreros* also tend to suspend gathering when they face adverse weather conditions.

[602] It is often claimed that the sale of basic supplies on the *barracas,* or generally in the rural areas, is a source of excessive gains on the part of *barraqueros* or itinerant merchants, with goods selling up to 100 percent up the Riberalta price. Evidence from the field, however, shows that in the vast majority of the cases the markup is 20-30 percent, reaching only in rare occasions up to 50 percent. Accounting not only for transport costs but also for the relatively high transaction costs, in particular in case of itinerant traders, 'excessive gains' frequently dwindle and reach what can be considered the economic minimum incentive to engage in trade.

gathering Brazil nut amounted to Bs.44 and Bs.62, respectively. In terms of gross income, an average *zafrero* thus earned 2.4 and 3.1 times, respectively, the daily wage.[603]

Even when accounting for the higher expenses on the *barracas*, these examples show that peri-urban households decide economically rational when participating in the *zafra*. It needs to be recalled that they do not represent the lowest income quintiles. On the contrary, both in terms of total and per-capita income they pertain to the medium-income quintile of the sample (mean values 3.3 each). This does not support the thesis of NTFPs as the last resort of the poorest among the poor. Rather, households engaging in the Brazil nut harvest stand out with regard to the share of income they derive from NTFP-related activities, with gathering and processing of NTFPs making up 62% of their total income. We are inclined to suppose that because of this high share rather than despite of it they pertain to the medium-income group of the sample. But before we can verify this hypothesis by analyzing the income opportunities provided in the urban-based shelling and canning industries, we shall have a short look at the sample households' involvement in the extraction of palm hearts as the second most important NTFP of the region (Table 5-26).[604]

Table 5-26 Salient features of the involvement of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, in palm heart extraction in 1997, by type of contract.

Type of contract	n	Palm hearts collected (#)	Assis-tants (#)	Days worked (#)	Daily output per person (#)	Gross income (Bs.)	Daily gross income per person (Bs.)
Hired by contractor	7	3116	0.6	79	25	4133	32.7
Hired by patron	5	2630	0.4	92	20	2959	23.0
Own account	4	986	0.3	20	38	1428	54.9

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'Own account' includes four extractors working independently from a contractor or patron. Excluded are a contractor with a net income of Bs. 300 from the sale of 1000 palm hearts, a patron with a net income of Bs.2400 (3000 palm hearts), and a specialized contractor with a net income of Bs.78,000 (156,000 palm hearts). One *boliviano* (Bs.) was about US$0.19 at the time of the survey.

The extraction of palm hearts from wild stands of *Euterpe precatoria* involved 15.8% of the household heads sampled (Table 5-26), with 12.5% temporarily working as extractors

[603] Daily wages including food were at Bs.16 in 1996/97 and Bs.18 in 1997/98, while the net balance derived from gathering Brazil was Bs.19 and Bs.22 per day, respectively.

[604] As mentioned before, our income data largely refers to the year 1997, that is a year when the palm heart industry saw the peak of its boom. Thereafter, it has experienced a considerable decline, in particular since 1999. Consequently, both the rates of involvement in palm heart extraction and the income derived from it were much higher in 1997 than they are today. Nevertheless we can view the 1997 data as signaling part of the adaptive responses of Riberalta's peripheral population to the latest rubber crisis. New studies as planned for the second phase of the CIFOR project on NTFPs could elaborate on the responses to the recent crisis in the palm heart industry (see CIFOR 1999).

(*palmiteros*), 2.5% as contractors/patrons, and one household head (0.8%) combining both functions.[605] As for the gathering of Brazil nut, households participating in palm heart extraction pertain to the medium total and per-capita income quintiles (mean values 3.1 and 2.9, respectively). Again, it is not the lowest-income group who participates in the extraction of an NTFP. Almost two-thirds (63.1%) of those engaged in palm heart extraction had participated in the *zafra* before, underpinning the urban-based extractor population's strong link with the rural area.

Those who work on their own account spent only about a fourth of the time in extraction relative to the *palmiteros* hired by a contractor or patron. This is due to the fact that only those who gather in the vicinity of town can sell directly, i.e. 'on their own account', to a canning factory; but as mature individuals of *E. precatoria* are ever more difficult to find near Riberalta (see Section 3.4.1), would-be *palmiteros* tend to join a contractor or patron to reach to unexploited stands in open-access areas along a principal road or a *barraca*, respectively. In absolute terms, independent *palmiteros* earn less than their contracted counterparts, but in terms of daily income it is the other way round.[606] Income from palm heart extraction can assume significant portions in individual cases, clearly exceeding that from gathering Brazil nut. Though we are lacking exact data on the expenses during the stay in the rural area, it is evident that palm heart extraction is economically competitive with casual labor: with the *jornal seco* being at Bs.20 in 1997, average *palmiteros* earned 1.2 to 2.7 times the daily wage. Typically, single extraction expeditions are less prolonged than the *zafra* because the rapid depletion of mature individuals of *E. precatoria* on a site under extraction and the maximum transport distance (see Section 3.4.1) force the extractors to return to town after a few weeks time. Unlike the Brazil nut harvest, palm heart extraction involves several extraction expeditions in a single season which rather frequent relocations.

Next to the extraction of Brazil nut and palm heart, extractive income relates to hunting and fishing. Both are an important supplement for a small number of peri-urban households: the sale of bushmeat is a source of income for three ex-forest dwellers, annually yielding Bs.300, Bs.1750 and Bs.2000, respectively. As for the rural areas, fishing is an important activity to supplement the dietary variety. About one tenth of the households surveyed are engaged in such activity, although only in exceptional cases the catch is sold to neighbors or on the central market in Riberalta: fish-based income is generated by three ex-forest dwellers and one *Riberalteño*, annually amounting to Bs.60, Bs.150, Bs.8100 and Bs.1215, respectively. These figures indicate that a number of households maintains strong bonds to the surrounding forests and its intrinsic waterways, in particular because many more than those mentioned rely on personally secured bushmeat or fish for household consumption.

A further NTFP-related activity is the extraction of fuelwood. Here we find two prototypes of ex-forest dwellers represented who continue to live exclusively or predominantly from extractive activities. The first is a seventy-year old widower living together with one of his sons. Extracting fuelwood from the nearby forest once a week, he generates Bs.12 per day or Bs.468 per year. Assisted by his son he also engaged in the Brazil nut harvest 1997/98, resulting in a gross income of Bs.2200 in addition to the Bs.800 from palm heart extraction in 1997. Due to his age he works only a few hours a day as an assistant of a *quebradora* during eight months of the year, generating an annual income of Bs.1755. Accounting for the Bs.960

[605] Only male household heads, at times assisted by adolescent males, participated in palm heart extraction.
[606] The distribution of income is as follows: patrons and contractors earned Bs.0.3-0.8 (mean 0.5) per palm heart, contracted *palmiteros* received Bs.0.5-1.5 (mean 1.2), and independent *palmiteros* got Bs.1.3-2 (mean 1.6).

his son contributes from construction works, their income in 1997/98 totaled Bs.6183, equivalent to the lowest total income quintile but the second quintile in terms of per-capita income. The second example is a man aged fifty-nine who shares a household with his wife and two adolescent children. In all extractive activities he is assisted by an adolescent son. The main source of income is fuelwood extraction, in which they engage for about eight months a year when not extracting Brazil nut or palm heart. Given a gross income of Bs.45 a day, their annual fuelwood income amounts to Bs.10,530. Accounting for the Bs.3125 from the Brazil nut harvest in 1997/98 and the Bs.2160 from palm heart extraction in 1997, the annual extractive income totaled Bs.15,815, equivalent to the second total and per-capita income quintiles.

After having scrutinized all income sources related to extractive activities, the results can be summarized (Table 5-27).

Table 5-27 Mean annual extractive income (in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and per-capita income quintile (with 1 representing the upper quintile and 5 the lower quintile).

Income quintile / Group of origin	1	2	3	4	5
Ex-forest dwellers	0	5428 (±5484)	3901 (±4081)	4308 (±4089)	2485 (±3309)
Extra-regional migrants	13,876 (±29,860)	0	0	0	–
Riberalteños	5912 (±8869)	2117 (±3728)	2288 (±2779)	975 (±1899)	1090 (±1834)
Total	**7988 (±17,327)**	**3458 (±4782)**	**2836 (±3462)**	**2103 (±3269)**	**1787 (±2712)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: One *boliviano* (Bs.) was about US$0.19 at the time of the survey. Standard deviation in parentheses.

While ex-forest dwellers and *Riberalteños* generate extractive income in substantial portions across most income ranks, only a small fraction of extra-regional migrants is involved in extractive activities (Table 5-27). Among the latter, only two out of a total of 14 have extractive income at all, albeit of a considerable magnitude. This small group comprises a contractor specialized in palm hearts (see note to Table 5-26) and an itinerant trader earning Bs.17,100 from Brazil nut.[607] *Riberalteños* pertaining to the highest quintile entail nine households without any extractive income; the remaining seven households generate annual extractive income of Bs.3300-8160 in case of the *zafreros* (n=4), or Bs.7500-22,400 in case of the patrons (n=3). In general, extractive income is most important to ex-forest dwellers: 61% of them generate income from extractive activities as compared to the *Riberalteños* (35%) and extra-regional migrants (14%). This is also reflected in the importance of extractive income

[607] This example illustrates the considerable gains, intermediaries may have: buying 900 boxes of Brazil nut in the *zafra* 1997/98 at Bs.35 each and selling at Bs.54 to a processing plant, the merchant's margin of Bs.19 per box translates into a gross gain of Bs.17,100.

relative to total household income: in the case of ex-forest dwellers it makes up 31% of the total household income including the households without extractive income; this compares to the shares of extra-regional migrants (24%)[608] and *Riberalteños* (19%). In absolute terms, when considering the quintiles 2-5 average ex-forest dwellers earn about double the extractive income of average *Riberalteños*, signaling their stronger bonds with the forest.

Agriculture

Having realized the strong role extractive income plays for the many peri-urban households, it does not come as a surprise that part of their income is also derived from agriculture. In fact, 12.5% of the households surveyed work an agricultural plot (*chaco*), own a rural parcel (*parcela*), or even run a *barraca*.[609] Not surprisingly, this share is superseded by ex-forest dwellers, of whom as much as 22.7% work an agricultural plot in the immediate surroundings of Riberalta (6.8%), if not a parcel in an independent community between 5 and 250 km away from town (15.9%). Among the extra-regional migrants, only one household (7.1%) works a small parcel on the floodplain opposite to Riberalta. The *Riberalteños* encompass three *barraqueros* (4.8%) and one household working a parcel in a nearby community (1.6%). As varied as the type of agricultural involvement as varied is the income derived from it (Table 5-28).

Table 5-28 Mean annual cash income (in Bs.) from agriculture of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin and per-capita income quintile (with 1 representing the upper quintile and 5 the lower quintile).

Group of origin	1	2	3	4	5
Ex-forest dwellers	0	1,273 (±4,221)	100 (±330)	0	301 (±810)
Extra-regional migrants	0	0	0	0	–
Riberalteños	836 (±2,588)	0	0	0	255 (±883)
Total	**558 (±2,129)**	**583 (±2,858)**	**46 (±224)**	**0**	**278 (±829)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation in parentheses.

On average, agriculture-based income is of minor importance to the peri-urban households surveyed, with only 7% relying on it (Table 5-28). Individual ex-forest dwellers or *Riberalteños*, though, generate substantial income from agriculture regardless of their per-capita income rank. Extra-regional migrants have no agricultural income at all, unlike the *barraqueros* with a mean agricultural income of Bs.4461 (±5098); this compares to those who work a plot (Bs.1058 ±1543) or a parcel (Bs.1887 ±4909). But it needs to be stressed that agricultural activities among the sampled households are mainly geared to subsistence. This is

[608] This percentage is inflated by the extraordinarily high income of the palm heart contractor mentioned. If excluding him, the share of extractive income relative to total household income among extra-regional migrants drops to a mere 5%.

[609] It shall be repeated here that a an agricultural plot is simply the agricultural area actually worked, whereas a parcel also encompasses earlier plots that are left idle and, in many cases, high forest and perhaps some grassland.

true of the extra-regional migrants and *Riberalteño* households and also of 60% of the ex-forest dwellers engaged in agriculture.

Urban income

Urban income in the context of this study comprises all income from activities that are based in Riberalta. Exceptions are transfer payments from outside, e.g. those related to the pension scheme, or remittances from persons that send money from elsewhere in Bolivia, if not from abroad. After addressing the income from salaried employment, the focus shifts to income generated in one of the processing plants for Brazil nut or palm heart. Thereafter we turn to income related to casual labor and self employment before concluding this section with a summary of the remaining income sources in town.

Salaries

According to what has been pointed out on informal sector employment and the occupational opportunities of rural-urban migrants at the beginning of this chapter, we would anticipate that the majority of peri-urban household heads faces difficulties to find permanent employment. Though our data largely confirm this hypothesis, the ratio between permanent and temporary employment is not as disproportional as could be expected. In 29% of the households surveyed, either the household head (23%) or the spouse (4%) or even both (2%) have secured permanent employment, that is year-round employment entitling to monthly salaries. If also accounting for those households that receive monthly salaries for at least eight months of the year, the total share rises to 36%. But even more household heads have regular sources of income as, for example, a large number of *quebradoras* works on a piece-work basis for about eight months a year (see below). In terms of salaried employment, though, males clearly outweigh females (Table 5-29).

Table 5-29 Mean income from monthly salaries in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by sex, permanency of employment, and group of origin.

Type of employment	Ex-forest dwellers			Extra-regional migrants			*Riberalteños*		
	n	avg.	StDev	n	avg.	StDev	n	avg.	StDev
Male permanent employment	6	10,576	(±7317)	8	19,920	(±12,678)	16	14,649	(±8690)
Female permanent employment	2	5400	(±4243)	–		–	7	11,266	(±5306)
Non-permanent male salaries	6	6253	(±4299)	2	3600	(±2546)	9	6417	(±4997)
Non-permanent female salaries	2	3600	(±3394)	1	8000		8	2915	(±2438)

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'Non-permanent employment' refers to employment during less than 12 months during the year before. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses.

As much as 44% of the male household heads sampled received monthly salaries either from permanent (28%) or non-permanent employment (16%) (Table 5-29). Extra-regional migrants are well-off as 64% of their households receive competitive monthly salaries, which are almost exclusively a male domain. Among the *Riberalteños*, about half the households generate substantial income from salaries to which females contribute significantly. Ex-forest dwellers are relatively worse-off as both in absolute and relative terms they have less salary-based income: just about a third of their households receives monthly salaries and these are typically lower than those of extra-regional migrants or *Riberalteños*. This is due to the type of salaried work they engage in:[610] ex-forest dwellers tend to assume occupations that require little formally acquired skills, such as simple works in a *beneficiadora*, as a gardener, or as unskilled laborer in a sawmill. Extra-regional migrants, on the other hand, rather assume mid- or high-level positions, e.g. civil engineer, military man, mechanic, or driver. Finally, *Riberalteños* reflect a variety of occupations ranging from low-skilled to high-skilled labor.

Processing of non-timber forest products

The Brazil nut industry is the single largest employer in Riberalta. In 1996, it provided permanent employment to 2814 persons, 74% of which were female and 26% male; if also accounting for the non-permanent staff, i.e. the assistants of the *quebradoras*[611], 5499 persons found employment in the *beneficiadoras* (Coesmans and Medina 1997: 152). These constitute

[610] There is no scope to go into details on the types of employment assumed; suffice it to say that 30 different kinds of employment were encountered among the males alone.

[611] Typically, a *quebradora* is regarded as responsible for an account (*dueña de la cuenta*) to which a number of assistants (*ayudantes*) contribute. These are in particular older children – the minimum age of entry varies from eight to twelve according to the plant (Coesmans and Medina 1997: 182) – but also male spouses and, to a lesser extent, persons that are subcontracted from outside the family. The account includes the amount of Brazil nuts shelled, the quality attained, and the articles purchased in the plant-run grocery. The balance is paid in cash to the *dueña de la cuenta* who, if employing persons other than the own household members, is responsible for its distribution.

also the most important employers from the perspective of peri-urban households. In our sample, 30% of the households had at least one person working in the shelling industry: 18% of the households were represented by the female household head or the spouse, 7% by both male household head and the spouse, and 5% by solely the male household head. Though the *beneficiadoras* rely in large part on a female work force, an increasing number of males becomes involved in the processing of Brazil nut (Table 5-30).

Table 5-30 Salient features of male employment in Riberalta-based processing plants for Brazil nuts, based on a random sample of peri-urban households (n=120) in four peripheral neighborhoods of Riberalta, northern Bolivia.

Type of occupation	n	Average duration of occupation (months per year)	Annual income (Bs.) (avg.)	(StDev)
Controller of incoming raw material (*recibidor de castaña*)	4	7.3	6750	(±6680)
Low-level technician (*sancochador*)	1	8.0	6240	–
Quebrador	5	7.5	6804	(±4787)
Assistant of *quebradora*	4	8.0	2769	(±689)

Source: Own data from Peri-Urban Household Survey 1998.

Note: The *sancochador* is responsible for the autoclave in which the crude nuts are steamed before they undergo a shock treatment in order to become brittle. This facilitates the shelling process, in which a *quebrador(a)* removes the seed coat by means of a hand-operated machine. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses.

Male employment in the Riberalta-based *beneficiadoras* has gained importance over the past years as reflected by the peri-urban households surveyed: 11.7% of the male household heads secure regular employment in one of the plants (Table 5-30).[612] Most of them are *Riberalteños* (57%), followed by ex-forest dwellers (36%) and extra-regional migrants (7%). Thus, *Riberalteños* are slightly overrepresented, extra-regional migrants are fairly underrepresented, and only the share of ex-forest dwellers is consistent with their representation in the sample population. This is striking, as it might have been expected that ex-forest dwellers are less inclined to a work that implies few liberties as compared to agricultural activities or forest product extraction. But these activities are by no means mutually exclusive, as virtually all *beneficiadoras* close down for up to four months at the turn of the year when the former harvest has been processed and the new raw material has yet to arrive. This temporary release of the work force involves the need for alternate employment which is readily available in the *zafra*: in our sample, 79% of the male work force in the *beneficiadoras* participated in at least one of the *zafras* between 1997 and 1999. Those males who work in a *beneficiadora* but generally do not participate in the Brazil nut harvest are exclusively *Riberalteños*. In other words, all male ex-forest dwellers working in a *beneficiadora* also leave for gathering Brazil nuts, reflecting their high contingence on NTFP-related activities.

[612] The involvement of adolescent male children has not been accounted for here as it is subject to pronounced fluctuations. Their shares were included in the computation of actual working hours invested by each household.

For many ex-forest dwellers, the *zafra* continues to be part of an annual cycle that, despite all odds in the forest, is a habitual activity they engage in beyond the sheer economic needs. Back in town, their majority is forced into the market for casual labor, reflecting an ambiguous process of proletarianization which affects both male and female rural-urban migrants. Without a subsistence base in the forest, the high need for cash income in town leaves little alternatives to increased proletarianization. The ease of entry to the large pool of low-skilled labor in the *beneficiadoras* is in particular an incentive to ex-forest dwellers who typically lack a higher educational background, as we have seen before. Males working in a *beneficiadora* and principally participating in the *zafra* have studied for 5.5 years on average, whereas those who are neither employed in such a plant nor harvest Brazil nut did so for 8.3 years. But it needs to be stressed that it is not NTFP-related employment *per se* that is sought after by low-skilled ex-forest dwellers and *Riberalteños*. They would as much engage in other industrial employment, if there were viable alternatives.[613] After all, despite its relatively low remuneration employment in the *beneficiadoras* provides a livelihood basis for the major part of the year. Except for assistants of a *quebradora*, who work only a few hours a day, male income from the processing of Brazil nut contributes significantly to the budget of the households concerned. This is one of the reasons why the former pertain to the lowest income quintiles, whereas the others assume medium-income ranks. Nonetheless, we should not view male employment in the *beneficiadoras* in isolation but put it into context with female employment (Table 5-31).

Table 5-31 Salient features of female employment in Riberalta-based processing plants for Brazil nuts and palm hearts, based on a random sample of peri-urban households (n=120) in four peripheral neighborhoods of Riberalta, northern Bolivia.

Type of occupation	n	Average duration of occupation (months per year)	Annual income (Bs.) (avg.)	(StDev)
Grader (*clasificadora*)	5	8.0	5166	(±2931)
Quebradora	22	7.2	5604	(±2728)
Assistant of *quebradora*	2	8.0	3360	(±339)
Palm heart factory	1	3.0	1500	–

Source: Own data from Peri-Urban Household Survey 1998.

Note: *Clasificadoras* are responsible for grading the Brazil nuts shelled by the *quebradoras*. The woman working in the palm heart factory had only recently assumed her duty, otherwise the average duration of occupation would be around eight months. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses.

Employment in the Riberalta-based *beneficiadoras* stands out among the economic activities of females in the peri-urban households surveyed: 27% of the female household heads and spouses secure regular employment in one of the plants (Table 5-31). If only accounting for the economically active among the spouses, as much as 48% are employed in a *beneficiadora.* Among the female household heads, of whom all are economically active, this share rises to

[613] Only two household heads were employed in a sawmill where they earn a monthly salary of Bs.780, equivalent to that of low-skilled workers in a *beneficiadora*.

58%. Unlike the males, it is the ex-forest dweller households which are over-represented among the female *beneficiadora* employees: they contribute 47%, as do the *Riberalteñas*, whereas extra-regional migrants remain underrepresented (7%). The former reach their highest share (52%) among the *quebradoras*, followed by *Riberalteñas* (43%) and extra-regional migrants (4%). The close association between harvesting and processing Brazil nuts is signaled by the high participation rate (63%) of these women's households in one or more of the *zafras* 1996/97-1998/99. Similar to the males, there is an education differential between those who work in a *beneficiadora* and principally partake in the *zafra* and those who engage in neither activity: on average, the former have studied for 5.7 years and the latter for 7.9 years.

The most important occupation in the *beneficiadoras* is that of the *quebradoras*. Unlike the graders (*clasificadoras*), they do not receive a monthly wage[614] but are paid on a piece-work basis. This explains why they involve other household members, in particular children above the age of eight or ten who assist their mothers upon their return from school. The working day is as monotonous as strenuous: average *quebradoras* work 12.9 hours a day,[615] assisted by up to four helpers (mean value 1.1) whose working hours combined average 7.2 hours. Thus, the daily labor input totals 20 hours per household on average. Apart from the fact that virtually all *quebradoras* still have to look after their household upon return to their home – in addition to rearing the children – these few figures illustrate that their work is lowly remunerated:[616] their daily economic return is Bs.30 or Bs.36, depending on whether they work six or five days a week, respectively. On the other hand, it needs to be recalled that the *jornal seco* of a daily laborer amounted to no more than Bs.20 at the time of the survey. Furthermore, employees of a *beneficiadora* receive a Christmas bonus (*aguinaldo*) and an additional bonus at the end of the year (*finiquito*),[617] basic medical service and, most importantly, credit. This *habilito* entails both the basic supplies advanced from the plant's grocery and credit in form of advance payments (Coesmans and Medina 1997: 182-4).

Involvement in the processing of palm heart has been insignificant in our sample as the then three processing plants (*palmiteras*) were located close to Riberalta's center. Given the relatively high transport costs,[618] most women prefer places of work close to their homes and rather search for economically less attractive alternatives when these are not available. Among the 26 women who had abandoned the work in a processing plant before, the main motive was distance (50%); less frequent motives were child care (12%), maladministration of the plant (8%), tedium (8%), or a host of family-related motives (22%).

Both male and female involvement in the processing of Brazil nut and palm heart decreases with increased consolidation of the *barrio*: male shares are lowest in *Los Almendros* and *Villa Don Carlos* (7% each), somewhat higher in *1° de Diciembre* (15%), and highest in *San Juan*

[614] In fact, *clasificadoras* receive a monthly wage but have to grade a minimum of 10 boxes (20 kg each) a day. This amount can rather easily be accomplished, and those who wish to earn an 'extra' are paid per piece for each additional box (Coesmans and Medina 1997: 163).
[615] In contrast, the women in charge of grading (*clasificadoras*) typically work between eight and ten hours a day. On the other hand, the two women assisting a *quebradora* worked 13 and 15 hours a day. This is not astonishing as they have to deliver about a fifth of their income to the *dueña de la cuenta*.
[616] For an excellent study on the various facets of the *quebradoras*' life, see Coesmans and Medina (1997).
[617] These bonuses depend on the average wage during the three months prior to their granting and typically amount to Bs.300-400 each (see Coesmans and Medina 1997: 181).
[618] A short-distance return trip on a motorbike taxi was at Bs.3 at the time of the survey but could be more than double if commuting between the periphery and the center was involved.

(21%). Similarly, female participation in NTFP processing is far lower in *Los Almendros* (20%), *Villa Don Carlos* (17%), and *1° de Diciembre* (20%), as compared to *San Juan* (50%). In this most recently founded *barrio*, which is predominantly inhabited by *Riberalteños* and ex-forest dwellers, the residents are highly contingent on the NTFP industry. As long as this neighborhood remains disarticulated from many urban facilities and services, this situation is unlikely to change.

Casual labor and self employment

Drawing on the theoretical framework at the beginning of this chapter, it could be expected that the majority of rural-urban migrants and a good number of their counterparts from Riberalta's periphery need to rely on the informal sector or, more specifically, on the casual labor market and what Bromley (1988) calls 'precarious self-employment'. Yet among the male household heads, just 49% generate income from the latter or casual labor (Table 5-32).

Table 5-32 Male income (Bs.) from casual labor or self-employment, and mean duration of involvement (days per year) among the heads of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by type of work and group of origin.

Type of labor or	Ex-forest dwellers				Extra-regional migrants				*Riberalteños*			
self-employment	n	days	avg.	StDev	n	days	avg.	StDev	n	days	avg.	StDev
Mototaxista	5	287	8667	(±4091)	1	330	14,850		10	242	7656	(±5496)
Bricklayer	5	204	6906	(±3652)	–	–		–	9	217	6136	(±2785)
Jobs related to the Brazil nut industry	4	175	5559	(±6213)	2	150	3532	(±1035)	6	193	4389	(±1696)
Others	6	168	6039	(±5596)	1	365	36,500		4	254	10,800	(±5913)

Source: Own data from Peri-Urban Household Survey 1998.

Note: For the sake of simplicity only the principal casual labor activity or type of self-employment is referred to. Further activities are included in the overall household income. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses.

Among the male household heads, *Riberalteños* (52%) and ex-forest dwellers (51%) are equally contingent on daily labor or self-employment, whereas only 31% of the extra-regional migrants engage as *jornaleros* (Table 5-32). The two single most important types of daily labor are *mototaxista* (30%) and bricklayer[619] (26%), both of which chiefly involve *Riberalteños*. This occupational concentration already indicates that the casual labor available to the peri-urban population is not as diverse as salaried employment: out of a total of fifteen types, five jobs involving 23% of the male *jornaleros* relate to the Brazil nut industry. It needs to be emphasized that 13% of the male *jornaleros* engage in two different activities.

[619] Though twelve out of the total of fourteen respondents under this category refer to their work as that of a bricklayer (*albañil*) it is likely that some of them should have grouped themselves as the remaining two did, namely as 'assistant of bricklayer'. This type of work is more casual than it might appear at a first glimpse as many who work on construction sites are subject to short-term contracting.

Similarly, as much as 17% of the male *jornaleros* combine daily labor with non-permanent salaried employment. In fact, we deal with a rather 'floating' labor force[620] given that a notable portion of the peri-urban dwellers shifts rather frequently between temporary jobs both in the formal and informal sectors.[621] The existence of a sufficiently large floating labor force is also a prerequisite for the recruitment of *zafreros* for the Brazil nut harvest. Reliance on casual labor in Riberalta combined with participation in the *zafra* should not only be viewed as constituting a last resort for peri-urban low-income groups. Rather, it is also part of the collective memory and behavior of the regional population, which is accustomed to adjust to the seasonal labor needs on a *barraca* and to change between different patrons and places for a host of reasons. A good deal of rural-urban migrants has a preference for short-term work due to socio-cultural traits: regular shifts from participation in the *zafra* to several months work in a *beneficiadora*, as a *mototaxista*, or as a bricklayer, and then back to the *zafra* or other extractive activity, can thus be attributed to the 'psychology of nomadism', as a respondent to an earlier survey put it (see Verheule 1998: 74).
Casual labor is not necessarily lowly reimbursed. Only relatively few 'odd jobs', such as loading and unloading boats (*marineros*), assisting a bricklayer or a carpenter, or packing Brazil nuts, were paid according to the 'minimum' *jornal* of Bs.20. In contrast, self-employed *mototaxistas* or bricklayers typically earn between Bs.28-32 a day, though in individual cases the daily income is as low as Bs. 15 or as high as Bs.50; specialized street vendors or mechanics may earn as much as Bs.50-60 a day. These figures illustrate that there is no uniform income from casual labor or precarious self-employment. Rather, it varies across the range of activities and, even for the same activity, according to the person itself as well as the employer or clientele (cf. Gilbert and Gugler 1992: 98). In addition, seasonal and general availability of casual labor accounts for the high variability of income. In comparison with formal-sector employment which typically involves monthly salaries of Bs.700-1200, informal-sector employment is rather competitive with monthly incomes of Bs.600-1100. Between the two sectors, an educational differential exists with respect to the extra-regional migrants, as those among them who are employed in the formal sector have studied 2.2 years more on average than their counterparts engaged in the informal sector. This differential diminishes with the *Riberalteños* (1.1 years) and is absent among ex-forest dwellers. When rural-urban migrants secure formal-sector employment they tend to occupy low-wage jobs as at this level they are not restricted by their low formal education. In contrast, *Riberalteños* and especially extra-regional migrants secure medium- and high-wage jobs in the formal sector more easily by playing their education card.[622] Can similar observations be made with respect to female self-employment or involvement in casual labor (Table 5-33)?

[620] A "... labor force is floating [when] it tends to be intermittently employed, unemployed or underemployed according to the contingencies affecting the economic level" (Quijano 1974: 414-5).
[621] For a detailed analysis of upward and downward mobility of peri-urban dwellers in Riberalta's labor market, see Verheule (1998: 73-83).
[622] In the formal sector, ex-forest dwellers typically earn only half the income of extra-regional migrants and about 30% less than *Riberalteños*. In the informal sector, ex-forest dwellers' mean income is 27% down that of extra-regional migrants but only 4% down that of *Riberalteños*.

Table 5-33 Female income (Bs.) from casual labor or self-employment, and mean duration of involvement (days per year) among peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by type of work and group of origin.

Type of labor or self-employment	Ex-forest dwellers				Extra-regional migrants				*Riberalteñas*			
	n	days	avg.	StDev	n	days	avg.	StDev	n	days	avg.	StDev
Laundress	10	94	2069	(±2332)	–	–	–		5	132	3923	(±2707)
Petty trade	3	146	4220	(±5843)	3	203	18,680	(±7740)	3	179	7073	(±5400)
Others	2	71	1335	(±1534)	–	–	–		1	234	3346	

Source: Own data from Peri-Urban Household Survey 1998.

Note: For the sake of simplicity only the principal casual labor activity or type of self employment is referred to. Further activities are included in the overall household income. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses.

Having realized that many women are housewives or secure regular employment in the *beneficiadoras*, it does not come as a surprise that a mere 24% of the female household heads or spouses are self-employed or rely on casual labor. Their choices in the informal sector are very limited: the majority (56%) works as a laundress, followed by various types of petty trade and street vending (33%), and a few other activities (11%). Doing laundry is a domain of ex-forest dwellers though on average they earn less (Bs.22 a day) than *Riberalteñas* (Bs.30). All groups of origin engage in commerce to equal shares but extra-regional migrants are by far the most economically successful: while ex-forest dwellers and *Riberalteñas* are confined to street vending through which they typically earn Bs.29-40 a day, the former run their own shop or commerce which earns them a mean daily income of Bs.92. Similar to the males, there exists an educational differential between women involved in the formal and informal sectors, with the number of study years averaging 7.2 and 4.5, respectively. Particularly striking is the educational and income differential between three female household heads working as nurses or as a weaver, and the fifteen laundresses: their number of study years average 10.7 and 4.3, respectively; and their mean annual income amounts to Bs.8280 and Bs.2687, respectively. Both in terms of income and educational background, female ex-forest dwellers are disadvantaged across the types of casual labor and self-employment.

Other remunerative activities or income sources in town

Income from renting single rooms or parts of a house are negligible in the sample population: only 3 out of the total of 120 households had income from rent, annually amounting to Bs.350, 500, and 2880, respectively. Similarly, a few peri-urban households receive remittances from family members working elsewhere in Bolivia or abroad, but unlike the central parts of Riberalta where the bulk of the remittances from Japan ends up, their contributions to peri-urban household economies are very modest. In contrast to a migrant survey in Rio Branco, Acre, where 15% of households were dependent on remittances from other households in the city (Schwartzman 1992: 61), only 3% of the peri-urban households surveyed in Riberalta declared to rely on remittance income. In these households, remittances made up between 6% and 33% of total household income, reflecting their crucial importance

for individual households.[623] The underrepresentation of household members of 65 years and above explains why none of the sampled households had received remittances from the national pension scheme.[624]

Rather than cash remittances, peri-urban households in Riberalta receive non-monetary contributions from the rural areas through kinship and family ties. Whenever they are visited by relatives from the countryside, these take along rice, plantains or manioc. This confirms the findings from Rio Branco where "the rural zone and the rubber estates continue to contribute to the subsistence of poor urban migrant families" (Schwartzman 1992: 61).

Gender-specific income summary

In the above analysis of income sources we have frequently distinguished between male and female income. In this section, we shall summarize the male and female contributions to household income, paying special attention to earnings derived from gathering, processing, and marketing of NTFPs.

Male contribution to household income

Male domination in the households surveyed is not only reflected in their vast majority (90%) being headed by males but also in their contribution to total household income. Across the groups of origin, male contributions average 75-80% of the overall household budgets (Table 5-34).

[623] The importance of remittances worldwide should not be underestimated. In 1995, for example, international migrant remittances exceeded US$70 billion (Taylor 1999: 63). According to the same author, pessimistic views on migration and development pervade the literature. In contrast, he suggests the new economics of labor migration (NELM), arguing that migration may set in motion a development dynamic, lessening production and investment constraints faced by households in imperfect market environments and creating income growth linkages (ibid.).

[624] In accordance with the 1996 pension reform law (*Ley Nº 1732*) promulgated by the Sánchez de Lozada administration as an important aspect of its capitalization program, the national pension scheme (*Bono Solidario* or BONOSOL) entitled all Bolivians over 65 years of age to an annual pension of Bs.1200 (roughly US$240). However, the scheme was effective only in 1996/7. The intent to transfer 50 percent of the shares in the capitalized enterprises to all Bolivians at least 21 years old at end-1995 met immediately with failure: "The previous plan to pass these benefits to the population (the supplementary payments to Bolivians at least 65 years of age known as the BONOSOL) was seriously underfunded in 1997, forcing the private pension funds to borrow US$50 million to meet all the payments. After it became clear that they could not finance these payments in 1998 without further borrowing, the pension funds suspended the BONOSOL to preserve their financial integrity" (Government of Bolivia 1998: 6-7). The new government under General Banzer seeks to revive the idea of a pension scheme under the label BOLIVIDA which will be financed entirely from a Solidarity Fund endowed with 30 percent of the shares held in the Collective Capitalization Fund (ibid.: 7). By the time of the survey, no payments under the new scheme had been made to elderly people in northern Bolivia.

Table 5-34 Summary of male income (Bs.) in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by source of income and group of origin.

Source of income	Ex-forest dwellers		Extra-regional migrants		*Riberalteños*	
	avg.	StDev	avg.	StDev	avg.	StDev
Total household income	12,750	(±6213)	28,862	(±23,513)	14,510	(±8879)
Total male income	9635	(±5666)	23,570	(±22,275)	10,957	(±7399)
Agricultural income	378	(±2116)	–		213	(±1298)
Timber extraction	–		–		535	(±3259)
NTFP extraction	3744	(±4237)	6938	(±21,525)	1950	(±3845)
NTFP processing	984	(±3003)	1170	(±2694)	709	(±2316)
Non-NTFP salaries	1880	(±4644)	11,229	(±13,810)	4427	(±7780)
Non-NTFP wages	2354	(±4190)	4025	(±10,194)	2959	(±4806)
Rent, remittances	80	(±479)	206	(±770)	8	(±64)
Other adult males	28	(±150)	–		114	(±688)
Male children	187	(±980)	–		40	(±317)

Source: Own data from Peri-Urban Household Survey 1998.

Note: Data refer to all 120 households surveyed irrespective of the sex of the household head. If not stated otherwise, income here is that of the male household heads. Child labor excludes the assistance to *quebradoras*.[625] One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

Extra-regional migrants clearly outweigh ex-forest dwellers and *Riberalteños* in terms of total household income and total male income (Table 5-34). Though the former's income sources vary widely – expressed in high standard deviations – some generalizations can be made: their income is typically generated through salaried or waged employment in branches other than the NTFP industry; NTFP extraction generates income for a small minority (14%), albeit in these cases to an extraordinary degree. In contrast, ex-forest dwellers are generally contingent on income from NTFP extraction and, to a lesser extent, their processing. Males in these households have least access to salaried or waged employment outside the NTFP industry. *Riberalteños*, on the other hand, show income patterns similar to those of extra-regional migrants, though principally at lower income levels. Across the groups of origin, male income from NTFP extraction clearly dominates that from NTFP processing. Other forest-based activities are of minor importance for the males as a whole but may be crucial for individual households, in particular as regards timber extraction among *Riberalteños*.

Female contribution to household income

[625] Income from both male and female child labor would rise significantly, if the assistance to the mothers in the shelling process was included. But the exact determination of the children's share of the overall *beneficiadora* income is impeded by their fluctuating working hours and the divergent output per child laborer. For a detailed overview of child labor in the *beneficiadoras* and in other branches of the urban economy, see Quiróz (1996).

Female contributions to household income assume significant portions not only in the households headed by females but also in those headed by males: in 92% of the former, the female household head is the principal contributor to the household budget; but even in six percent of the male-headed households, more than half the income is generated by the spouse, in some instances assisted by other female household members. This is especially the case in households in which the male household head relies to a large part on extractive and/or agricultural income while his spouse secures regular employment in a *beneficiadora* or elsewhere. On average, males contribute 0-15% to the total income of female-headed households, while females contribute 14-18% to that of male-headed households.[626] Unlike female extra-regional migrants, sources of income are fairly varied among female ex-forest dwellers and *Riberalteñas* even if relatively few sources dominate (Table 5-35).

Table 5-35 Summary of female income (Bs.) in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by source of income and group of origin.

Source of income	Ex-forest dwellers		Extra-regional migrants		*Riberalteñas*	
	avg.	StDev	avg.	StDev	avg.	StDev
Total household income	12,750	(±6213)	28,862	(±23,513)	14,510	(±8879)
Total female income	3114	(±3849)	5291	(±8384)	3553	(±4616)
Agricultural income	47	(±223)	–		52	(±286)
NTFP extraction	147	(±447)	–		221	(±928)
NTFP processing	1804	(±3143)	1288	(±2986)	967	(±2124)
Non-NTFP salaries	218	(±978)	–		1496	(±4039)
Non-NTFP wages	887	(±2129)	4003	(±8514)	713	(±2197)
Rent, remittances	11	(±75)	–		58	(±457)
Other adult females	–		–		46	(±366)

Source: Own data from Peri-Urban Household Survey 1998.

Note: Data refer to all 120 households surveyed irrespective of the sex of the household head. If not stated otherwise, income here is that of the female household heads. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

Female income in the peri-urban households surveyed relies chiefly on three basic sources, viz. the processing of Brazil nut, non-NTFP wages, and non-NTFP salaries (Table 5-35). While these three types of income contribute relatively evenly to the earnings of *Riberalteñas*, those of female ex-forest dwellers rather root in the processing of Brazil nut; females in extra-regional migrant households, in turn, have their economic stronghold in commerce, supplemented by earnings from the Brazil nut industry. Other sources of female income are absent from the latter and of some importance only in individual households of ex-forest dwellers or *Riberalteñas*.

[626] These figures refer to the range of mean values across the groups of origin.

Gender-specific income from NTFPs

Income derived from NTFP-related activities is crucial to the majority of peri-urban dwellers: 58% of the peri-urban households surveyed derive income from the gathering, processing, and/or trading of NTFPs. This share is highest among ex-forest dwellers (77%), followed by *Riberalteños* (48%) and extra-regional migrants (43%). NTFP-based income is generated by both females and males, involving a gender-wise division of labor (Table 5-36).

Table 5-36 NTFP-based income (Bs.) in peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin, type of NTFP income, and sex.

Type of NTFP income / Group of origin	NTFP extraction ♂	NTFP extraction ♀	NTFP salaries ♂	NTFP salaries ♀	NTFP wages ♂	NTFP wages ♀
Ex-forest dwellers	3744 (±4237)	147 (±447)	415 (±2020)	191 (±1270)	569 (±2328)	1610 (±2984)
Extra-regional migrants	6938 (±21,525)	–	669 (±2502)	679 (±2140)	505 (±1314)	610 (±2281)
Riberalteños	1950 (±3844)	221 (±928)	285 (±1914)	152 (±722)	425 (±1395)	815 (±2059)
Total	**3190 (±8200)**	**168 (±720)**	**377 (±2013)**	**228 (±1170)**	**487 (±1775)**	**1080 (±2475)**

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'NTFP extraction' chiefly refers to the extraction of Brazil nut and palm heart; 'NTFP salaries' refers to salaried employment in the Brazil nut and, to a very limited extent, palm heart industries; 'NTFP wages' are predominantly those of *quebradores* and, to a lesser extent, daily laborers in the Brazil nut industry. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation in parentheses; slight divergences are due to rounding.

Two categories stand out with respect to NTFP-based income: NTFP extraction, which is clearly dominated by males, and NTFP processing, which is chiefly a female domain (Table 5-36). In contrast, salaried employment in the NTFP industry is neither of major importance for the sample as a whole nor is it gender-specific. Nonetheless, the high standard deviations in most categories point to the high variability of NTFP-based income across sexes and groups of origin. Interestingly, NTFP extraction is more dominated by males than might be expected. We have seen earlier that quite a few spouses accompany their husbands to the *zafra*; but even then they are chiefly occupied by cooking, looking after the children, and doing the laundry. In fact, their share in the Brazil nut harvest does not exceed 10 percent of the volume collected. This explains why extraction-based income is of minor importance for females irrespective of the group of origin.[627] On the other hand, female dominance in the processing of Brazil nut and palm heart is less pronounced than is widely held. Especially in the case of extra-regional migrants and *Riberalteños,* the average female income from NTFP processing is less than double the male. But a clear gender-specific division of labor exists among the ex-forest dwellers: the males chiefly engage in the extraction of NTFPs while their spouses or female household heads generate substantial income in the *beneficiadoras.*

[627] Female contribution to the overall output in the Brazil nut harvest was highest among *Riberalteños* (15%), but rather low in case of the ex-forest dwellers (5%), and absent among the few extra-regional migrants sampled who participated in the *zafra.*

Synthesis of income aspects

The peripheral neighborhoods investigated do not reproduce the social stratification of Riberalta as a whole, since commerce and services are concentrated in the town's center. The apparent scarcity of related economic activities at the periphery might lead to the assumption that peri-urban dwellers share in poverty. According to an earlier survey, average household incomes in the peripheral neighborhoods were reported to vary between US$960 and US$1150 a year (see Van Beijnum 1996: 56, 66).[628] This, however, is a gross underestimation of the true magnitude of earnings. In our survey, only the lowest income quintile comprises annual household incomes of Bs.5000-8525[629] (about US$950-1630). In contrast, the second lowest and medium quintiles embrace incomes of Bs.8700-Bs.10,780 (about US1650-2050) and Bs.10,800-13,500 (around US$2060-2570), respectively. Finally, the two upper quintiles comprise annual incomes of Bs.13,520-20,990 (around US$2575-4000) and Bs.21,000-80,000 (around US$4000-15,240), respectively.[630] In contrast to theory there is little evidence for a rural-urban wage differential (see Stoian, in prep.).[631] Rather, peri-urban households are worse-off than their rural counterparts as they lack a subsistence basis. Accessibility of urban facilities and services, though, compensates peri-urban dwellers for their higher burden of household expenditures. Evidently, opportunities for the allocation of household budgets vary according to income levels. Income at Riberalta's periphery is somewhat skewed toward the richer sections and hence less evenly distributed as might be expected (see Table 5-37). This is reflected, *inter alia*, in the difference between the average and the median annual income, amounting to Bs.16,550 (around US$3,150) and Bs.12,080 (US$2,300), respectively. In other words, the poorer half of households disposes of 73% or less of the average household's income. This ratio is also reflected in the Lorenz curve[632] of income distribution (Figure 5-2).

[628] Van Beijnum (1996) simply asked the respondents to estimate their average monthly income. It is hardly surprising that this approach results in a gross underestimation of income. First, only by addressing sources of income separately interviewees are enabled to recall both amplitude and magnitude of their earnings. Second, the straight question for household income in supposedly disadvantaged households is likely to result in an underestimation for tactical reasons as respondents may expect assistance from a foreign interviewer. A detailed inquiry of income sources, on the other hand, helps to curb tactical responses by allowing for cross-checking.

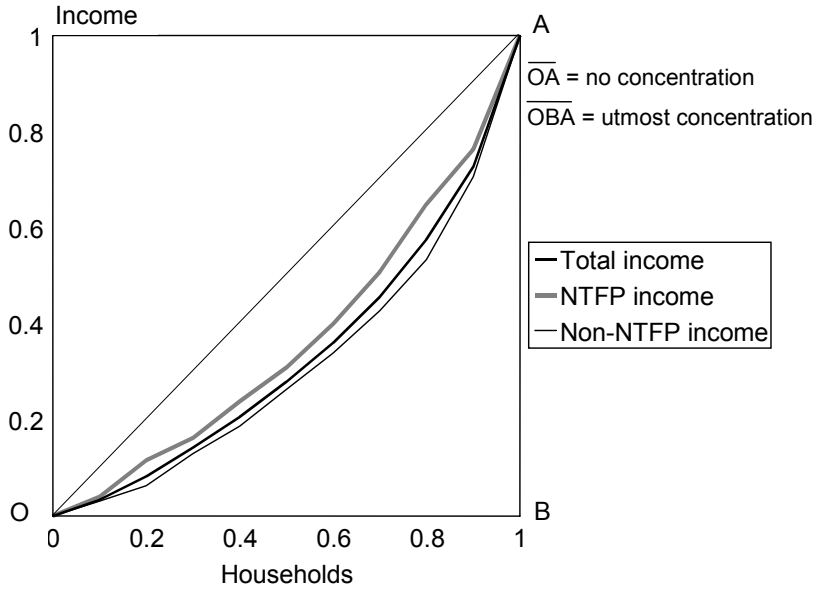
[629] This range disregards an exceptional two-person household whose annual income did not exceed Bs.3060.

[630] These figures compare to Bolivia's GDP per capita of US$969 in 1997 (Bureau of Economic and Business Affairs 2000: 1).

[631] Total household incomes in the rural areas are typically in the magnitude of Bs.8000-20,000 (about US$1500-3800) per year. Per-capita income varies usually from Bs.1000 to Bs.3500 (around US$190-670) but may be as low as Bs.400-700 (about US$75-135) or as high as Bs.6000-9000 (around US$1150-1700). The most important sources of income are forest product extraction (about 60% of total income), agriculture (about 15%), and wage labor (about 15%). In the more remote areas, NTFP-based income makes up for 50-90% of overall household income (ibid.).

[632] The Lorenz curve is the most common mode to illustrate relative concentration of a variable. Developed by the North American statistician M.O. Lorenz, it was first presented in 1904/05 (Kromrey 1995: 352).

Figure 5-2 Lorenz curve of income distribution among peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia.



Source: Own data from Peri-Urban Household Survey 1998

Note: The line OA denotes the theoretical curve of even distribution.

Income distribution among the peri-urban households is concentrated at the richer end of the sample (Figure 5-2). The poorer half of households earns little more than one-quarter of the total income, and almost one-third of the latter accrues to the richest 10 percent. These better-off, disposing of an annual income exceeding Bs.25,000 (US$4780), encompass seven households of *Riberalteños*, four of extra-regional migrants, and only one of an ex-forest dweller. Interestingly, two households of low-skilled laborers also pertain to the richest 10 percent: the first is that of a *Riberalteño* who, after having participated in the *zafra*, worked in a *beneficiadora* and as a *mototaxista;* his wife was a full-time laundress, his brother contributed his income as a driver, and a son aged fourteen worked as a grocery assistant (*ayudante de pulpería*). Another low-skilled but better-off household is that of an ex-forest dweller: the male head extracted palm heart and, assisted by his wife, Brazil nut; or else he worked as a tree finder in the timber industry and his spouse as a *quebradora*. [633] These few examples underpin that forest product extraction and involvement in related processing can principally lead to elevated household incomes. In general, though, households relying on NTFP-based income are slightly worse-off than those independent from it, as expressed in mean total income quintiles of 3.1 and 2.8, respectively (Table 5-37).[634]

Income distribution among peri-urban households varies primarily because of diverging income outside the NTFP sector. In fact, NTFP income is more evenly distributed than non-

[633] The remaining households among the richest 10 percent include two *barraqueros*, one *contratista*, a military man running a Karaoke bar, a chainsaw operator with his wife working as a teacher, a civil engineer with his wife working as a merchant, two drivers with their wives working as merchants, a male nurse with his wife working as a teacher, and a mechanic.

[634] In terms of per-capita income this difference is even more pronounced: the mean value of the income quintiles is 3.2 in case of those who rely on NTFP-based income compared to 2.7 for those who do not.

NTFP income, being reflected in Gini Coefficients of 0.26 and 0.34, respectively.[635] Total income is slightly less concentrated than non-NTFP income, with a Gini Coefficient of 0.32. In sum, 80 percent of the sampled households pocket around two-thirds of NTFP income and little less than half the non-NTFP income.

Table 5-37 Mean annual household income (total, NTFP and non-NTFP income in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by per-capita income quintiles (with 1 representing the upper quintile and 5 the lower quintile).

Per-capita income quintile	Total income		NTFP income		Non-NTFP income	
	avg.	StDev	avg.	StDev	avg.	StDev
1	28,882	(±19,179)	7930	(±17,030)	20,952	(±18,578)
2	15,509	(±6054)	4993	(±5649)	10,516	(±7606)
3	13,749	(±5291)	5900	(±6226)	7849	(±4929)
4	11,573	(±3657)	5455	(±6364)	6118	(±4520)
5	7981	(±2924)	3730	(±3248)	4251	(±4224)

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'NTFP income' comprises chiefly the earnings from gathering, processing, and trading Brazil nut and palm heart. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

NTFP-based income is rather evenly distributed among the sample population, whereas earnings from sources other than NTFPs are more concentrated (Table 5-37). The former figures prominently in the highest per-capita income quintile, where in particular *barraqueros* and *contratistas* account for a high average, but also in the medium quintile which comprises a good number of *zafrero* and *quebradora* households. If disregarding the first quintile, we can broadly summarize that NTFP-based income of roughly the same magnitude is generated across the continuum from better-off to worse-off households. In contrast, non-NTFP income follows a rather linear trend as it is directly proportional to the per-capita income rank. Income differentiation among peri-urban households thus owes to the variability of non-NTFP income rather than divergent levels of earnings from gathering, processing, or trading NTFPs. In this context, the group of origin proves an important differential (Table 5-38).

[635] The Gini Coefficient is a unit of measurement allowing to determine the degree of concentration. It is defined as the ratio between the empirical deviation from even distribution and the greatest deviation possible; the Gini Coefficient assumes values between 0 ('no concentration') and 1 ('utmost concentration') (Kromrey 1995: 356).

Table 5-38 Mean annual household income (total, NTFP and non-NTFP income in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin.

Group of origin	Total income		NTFP income		Non-NTFP income	
	avg.	StDev	avg.	StDev	avg.	StDev
Ex-forest dwellers	12,750	(±6213)	6679	(±6114)	6071	(±6044)
Extra-regional migrants	28,862	(±23,513)	9399	(±21,370)	19,462	(±20,920)
Riberalteños	14,510	(±8879)	3980	(±5335)	10,530	(±9623)

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'NTFP income' comprises chiefly the earnings from gathering, processing, and trading Brazil nut and palm heart. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

Extra-regional migrants have, on average, far higher incomes than ex-forest dwellers or *Riberalteños* (Table 5-38). This is due in large part to the income they generate outside the NTFP sector. It should be recalled that only two out of a total of fourteen extra-regional migrant households rely on NTFPs: if discounting the related earnings of a palm heart contractor and a Brazil nut merchant, NTFP income of extra-regional migrants drops to nil. Ex-forest dwellers, on the other hand, are generally contingent on NTFP income which outweighs their earnings outside the NTFP sector. *Riberalteños* typically rely to only about one-fourth of their total earnings on NTFP-based income. Yet they are only slightly better-off than ex-forest dwellers. But it needs to be recalled that high contingency on NTFPs does not stand for poverty. Rather, NTFP-based income is the *sine qua non* for the economic survival of the majority of rural-urban migrants in town; it also provides a livelihood basis for younger households and low-income groups among the *Riberalteños*. These characteristics become further manifest when comparing the income distribution across the neighborhoods investigated (Table 5-39).

Table 5-39 Mean annual household income (total, NTFP and non-NTFP income in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by neighborhood.

Neighborhood	Total income		NTFP income		Non-NTFP income	
	avg.	StDev	avg.	StDev	avg.	StDev
Los Almendros	18,866	(±14,903)	5605	(±6827)	13,262	(±16,544)
Villa Don Carlos	19,757	(±15,115)	6349	(±15,510)	13,407	(±10,804)
1° de Diciembre	10,825	(±5426)	5978	(±5425)	4847	(±4397)
San Juan	12,707	(±5433)	4475	(±3967)	8232	(±6992)

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'NTFP income' comprises chiefly the earnings from gathering, processing, and trading Brazil nut and palm heart. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

Incomes in the more consolidated neighborhoods *Los Almendros* and *Villa Don Carlos* are almost double those of the more recently founded *1° de Diciembre* and *San Juan* (Table 5-

39). Concurrent with the findings above, NTFP-based income is rather evenly distributed across these *barrios* whereas non-NTFP income typically increases with consolidation. While slightly diverting from the general trend, the inhabitants of *1° de Diciembre* have even less access to income from sources other than NTFPs as compared to the residents of *San Juan*. The latter accommodates a good number of younger *Riberalteño* households that typically exhibit higher educational levels than the ex-forest dwellers prevalent in *1° de Diciembre.* This gives credit to the assumption that formal education might be a key determinant of income formation in the households surveyed (Table 5-40).

Table 5-40 Mean annual household income (total, NTFP and non-NTFP income in Bs.) of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by level of formal education of household heads.

Level of formal education	n	Total income		NTFP income		Non-NTFP income	
		avg.	StDev	avg.	StDev	avg.	StDev
Tertiary education (*profesional*)	2	39,250	(±21,567)	0	–	39,250	(±21,567)
Secondary education completed (*bachiller*)	12	18,500	(±19,384)	467	(±1617)	18,033	(±19,763)
Higher secondary education (*medio*)	33	14,198	(±7352)	3193	(±4287)	11,005	(±8764)
Lower secondary education (*intermedio*)	25	14,267	(±9105)	4940	(±5999)	9326	(±10,158)
Primary education (*básico*)	44	15,598	(±12,477)	9022	(±12,731)	6576	(±6531)
None (*ninguno*)	4	13,160	(±7771)	10,190	(±4685)	2970	(±5319)

Source: Own data from Peri-Urban Household Survey 1998.

Note: 'NTFP income' comprises chiefly the earnings from gathering, processing, and trading Brazil nut and palm heart. One *boliviano* (Bs.) was about US$0.19 at the time of the survey; standard deviation (StDev) in parentheses; slight divergences are due to rounding.

At Riberalta's periphery, household income is strongly correlated with the educational level of the household heads (Table 5-40). NTFP income is inversely proportional and non-NTFP income is directly proportional to the educational level accomplished by the household heads: the lower the formal education of household heads, the higher their absolute and relative NTFP income. Reversely, non-NTFP income increases both relatively and absolutely with increasing levels of formal education. In terms of total household income, higher education seems to pay off only upon completion of higher secondary education. This finding, however, is somewhat misleading in that the number of children – and hence household members – is inversely proportional to the household heads' number of study years (r^2=-0.47). Consequently, per-capita income generally increases with higher education: even if mean per-capita income hardly varies up to the lower secondary level,[636] it increases by about one-third at the higher secondary level, and yet another two-thirds at the tertiary level.

[636] On average, the households headed by a person without formal education reveal a per-capita income of Bs.3120 a year, as compared to those headed by someone with primary or lower secondary education (Bs.2964 each).

The low educational background of ex-forest dwellers is the key factor for their high reliance on NTFP income. The NTFP industry provides them with employment opportunities that require little formal skills. The continued involvement of ex-forest dwellers in extractive activities should not only be viewed as a response to lacking employment alternatives: it also signals their affiliation to the rural areas and related economic activities. In fact, their residential changes have not been as disruptive as the literature suggests, since rural-urban ties are maintained, if not intensified. Extra-regional migrants, on the other hand, can play their educational token, gaining access to a diverse set of commercial and service-oriented activities through their higher formal skills. *Riberalteños* linger somewhere in-between: though more accustomed to the conditions of the urban labor market than ex-forest dwellers, their employment and career opportunities depend likewise on their educational accomplishment. Lower educated *Riberalteños* rely to a similar extent on NTFP-based income as ex-forest dwellers.

The superior economic performance of extra-regional migrants relative to ex-forest dwellers and *Riberalteños* is further reflected in the amount of debt accumulated. In fact, debts are characteristic throughout the region: "One does not live without debt" ("*Sin deuda no se vive*") is a common saying in Riberalta. Little less than half the households (46%) reported to be indebted.[637] On average, extra-regional migrants had the least debts (Bs.308),[638] followed by ex-forest dwellers (Bs.457) and *Riberalteños* (Bs.825). In 61% of the cases, debts were attributed to the outstanding payment of the lots acquired under the *Plan Social*; these debts averaged Bs.1910. Smaller amounts are typically owed for foodstuffs, household-electric, and merchandise. Many groceries offer the opportunity to buy basic supplies on credit (*fiado)*, with the outstanding payments typically amounting to Bs.200-300. In case of regular monthly income transfers, part of the income may routinely be distrained to repay this type of credit.

Typology of peri-urban livelihood strategies

The distinction between three groups of origin proved valuable for the analysis of migration histories and income patterns among peri-urban dwellers. A typology of related livelihood strategies, however, needs to go beyond this discrimination. The household of an ex-forest dweller might for example base its living on similar strategies as that of a *Riberalteño*. Nonetheless, a more refined typology of peri-urban livelihood strategies has to account for the salient features of the three groups concerned (Table 5-41).

[637] The actual share might even be higher: though debts in northern Bolivia are not put under taboo as perhaps elsewhere, it is still somewhat embarrassing to report outstanding payments to a person alien to the respondent.
[638] This figure excludes two extra-regional migrants who accumulated a debt of Bs.27,500 each for the reconstruction of their houses. These households belong to the highest income quintile with annual earnings of Bs.54500 and Bs.74,400, respectively. Both the amount of debts and the possibilities to pay them off need to be treated as exceptional cases.

Table 5-41 Summary of the main characteristics of peri-urban households (n=120) randomly sampled in four peripheral neighborhoods of Riberalta, northern Bolivia, by group of origin.

	Ex-forest dwellers	Extra-regional migrants	*Riberalteños*
Urban background	low to moderate	high	high
Neighborhood	little consolidated	consolidated	varied
Household size	moderate to large	moderate	moderate
Educational levels	low to moderate	moderate to high	moderate to high
Prevailing migratory pattern	complex linear rural-urban migration	linear urban-urban migration	nil or simple linear rural-urban migration
Principal male occupations	extractivism/agriculture and construction	construction and services	construction, extractivism/agriculture and services
Principal female occupations other than housewife	industry and services	industry and commerce	industry and services
Importance of NTFP extraction	generally high	usually low with few exceptions	moderate to high
Importance of NTFP processing	high	moderate	moderate
Importance of casual labor	moderate to high	low to moderate	moderate to high
Importance of salaried employment	low	high	moderate
Mean total income	moderate	high	moderate
Mean NTFP income	high	usually low	moderate
Mean non-NTFP income	low	high	moderate

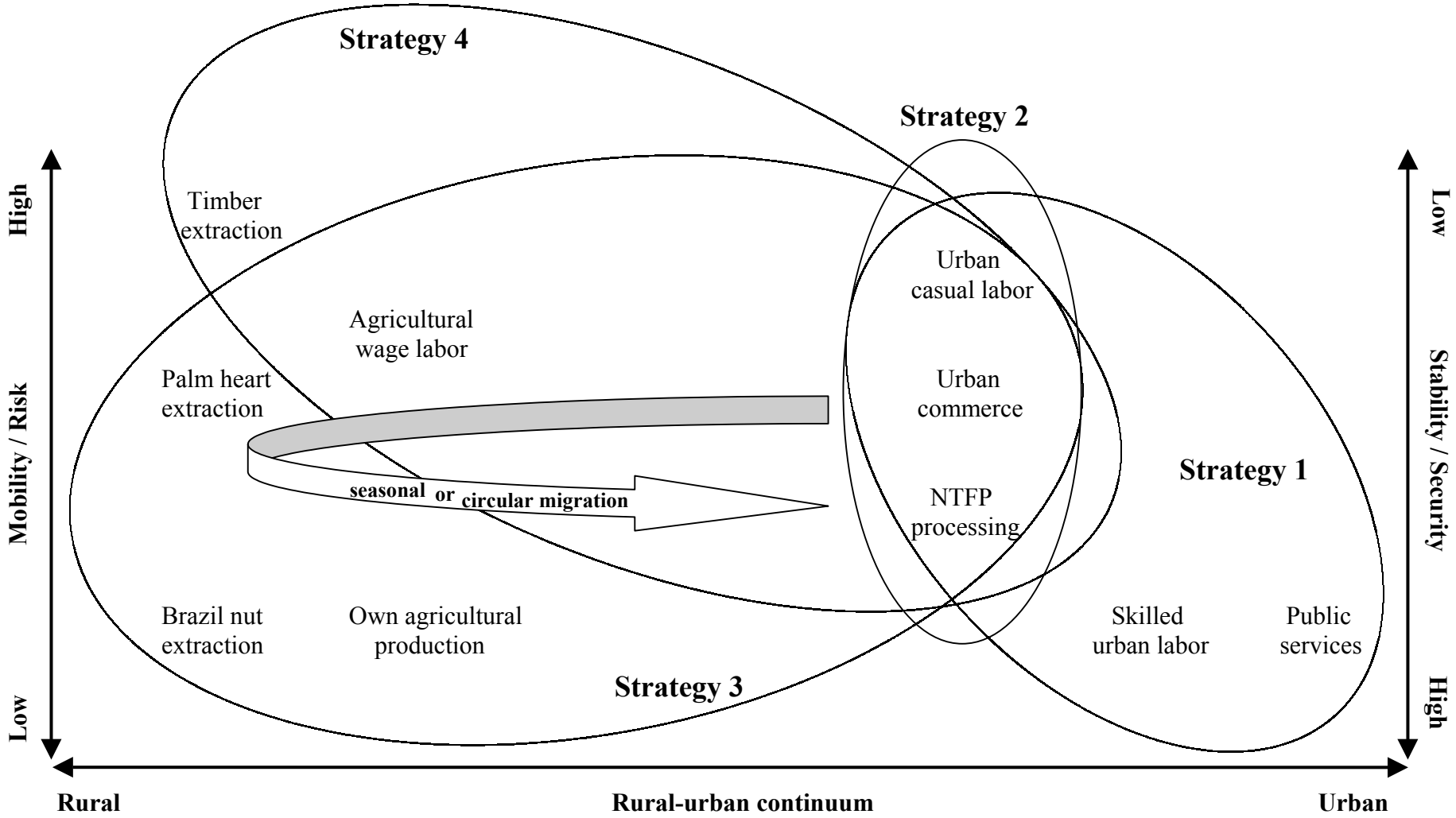
Source: Own data from Peri-Urban Household Survey 1998/99.

Despite the inherent constraints of generalizations as made in Table 5-41, a rough picture emerges that depicts the ex-forest dwellers as the most disenfranchised group at Riberalta's periphery. In terms of education, job security, and income, they are typically second to *Riberalteños* and, particularly, extra-regional migrants. Drawing on the salient traits of the rural-urban continuum as laid out in Table 5-1, ex-forest dwellers continue to be the most 'rural' group at Riberalta's periphery: extractive and agricultural activities are dominant, involvement in labor intensive activities is high, in-kind payment assumes important levels, upward social and occupational mobility is restricted, seasonal routines are dominant, and engagement in economic activities with low formal skill requirements prevails. In contrast, extra-regional migrants are the most 'urban' group in the peripheral neighborhoods: commercial-industrial service activities are dominant, cash transactions clearly outweigh in-kind payments, social and occupational mobility is less restricted, daily routines are dominant, and involvement in employment with higher skill requirements is more

pronounced. Interestingly, *Riberalteños* cover the whole range of the rural-urban continuum from the very 'rural' to the very 'urban'.

Accounting for the salient features of the three groups of origin as well as their rural and urban traits, we can embark on a more refined typology of peri-urban livelihood strategies. It takes into account the mobility required, the risks, relative stability and security involved, principal occupations and earning opportunities, and the households' ties with the rural areas (Figure 5-3).

Figure 5-3 Principal livelihood strategies of peri-urban households in Riberalta, northern Bolivia.



Source: Own elaboration.

Note: The circles are to be understood as major but not necessarily impenetrable boundaries of livelihood strategies.

Four principal livelihood strategies can be distinguished among Riberalta's peri-urban households: two strategies are based on exclusive involvement in the urban labor market, and another two entail repeated, more or less prolonged stays in the rural areas to engage in agricultural or extractive activities (Figure 5-3). All strategies depart from the core of the urban labor market, comprising casual labor, commerce, and the processing of NTFPs. In view of the relatively low degree of occupational differentiation, there is virtually no household that does not generate at least part of its income from core economic activities.

The **first strategy** is largely built on career work *sensu* Bromley (1988), i.e. career wage-work in the public service sector, or career self-employment as a skilled laborer. This strategy requires little occupational and residential mobility and provides a rather high degree of stability and security of work opportunities. This livelihood strategy is chiefly pursued by the relatively small number of extra-regional migrants and, to a lesser extent, *Riberalteños* whose household heads and/or spouses dispose of the formal educational qualifications required.[639] Gender segregation is characteristic: a common picture is a male household head assuming career work while his spouse engages in commercial or service-related activities, if not working in a *beneficiadora.* This strategy has virtually no links to the rural area and can hence be considered the most urban among the strategies encountered.

The **second strategy** rests in casual work *sensu* Bromley (1988), involving male short-term wage-work in construction, small-scale transport, and industry, and female 'precarious self-employment' in commerce or 'on-premises working' in a *beneficiadora.* Because of the more casual character of labor relations, this strategy requires higher occupational mobility and provides less stability and security than the first strategy. It constitutes a resort to the multitude of households whose members lack the formal skills to enter career work and who are disinclined to engage in agricultural or extractive activities. Though encountered in substantial numbers across all groups of origin, the second strategy is a stronghold of *Riberalteños.* It is predominantly urban-based, with a rural link constituted by the NTFP industry's dependence on raw material from the rural areas. Though the households pursuing this livelihood strategy do not engage themselves in the extraction of NTFPs, they are affected by fluctuations of the related markets, in particular when involved in NTFP processing.

The **third strategy** is equally important as the former and akin in that it has a strong base in the core of the urban labor market, in particular as regards female occupation. It differs, however, in that it extends to the rural areas where agricultural and/or extractive activities provide supplementary livelihood bases. In addition to occupational mobility, this strategy requires residential flexibility as it involves seasonal or, when more prolonged, circular migration to the rural areas. Palm heart extraction and agricultural wage-work call for a high degree of mobility, with the former entailing recurring extraction expeditions and the latter being subject to fluctuations according to agricultural seasons. Stability and security rather root in the Brazil nut harvest, characterized by seasonal but secure demand for labor, and/or

[639] Verheule (1998: 82) argues that "short-cuts to career self-employment can be provided by access to land, business instinct, capital, and other assets." Applied to a *zafrero*-turned-contractor this translates into access to land by encroaching state-owned forest or finding an agreement with a *barraca* owner; by securing capital through a *habilito* sought from a *beneficiadora*; and by involving one's business instinct in searching out the various business partners, such as entrepreneurs, *barraqueros,* and *zafreros*. Market information is crucial in this respect, and this explains why ex-forest dwellers, who tend to lack this information, are rather deprived of that type of career development. Basically, however, this path is open to anyone who acquires the confidence of a *habilito* provider, as open-access resources, and hence land, are rather readily available.

working an own agricultural plot to meet subsistence needs.[640] Gender segregation manifests in rural income being primarily a male domain, whereas females tend to engage in petty commerce, work as a laundress or in a *beneficiadora.* This strategy requires little formal skills, few capital, but affiliation with rural activities. It is therefore most apt for ex-forest dwellers though it is also pursued by *Riberalteños* with low formal skills who are not disinclined to rural work. This livelihood strategy is the most rural in character since in addition to forest product extraction it involves agricultural activities.

The **fourth strategy** is to some extent a modification of the former. The main difference is the type of rural activities engaged in and the more pronounced gender segregation. Unlike the third strategy, the extraction of NTFPs is of minor importance and, in particular, there is no participation in the *zafra.* Instead, timber extraction becomes one of the main pillars of the household economy. In return for the higher mobility required and more risks involved, timber extraction offers attractive earning opportunities.[641] This strategy is therefore pursued by households, above all *Riberalteños,* whose male heads are prepared to take risks in volatile logging operations, whereas their spouses are effectively exempted from rural activities. Less rural-based than the third strategy because of lacking involvement in agriculture, the timber-based livelihood strategy is, for the time being, pursued by a small minority of peri-urban dwellers. In the mid and long term its importance is anticipated to rise, in particular if there was a severe setback in the Brazil nut industry, but also as a consequence of the timber industry's general drive to Bolivia's North.

'Security' of peri-urban livelihood strategies

Bolivia's northern frontier is being rapidly urbanized. Even so, most new arrivals to Riberalta and a good number of long-established town dwellers maintain strong rural ties. The variety of livelihood strategies encountered exhibits various degrees of rural-urban links. Even more complex are the related patterns of income formation and migration. We have seen earlier that the two principal hypotheses seeking to explain rapid city growth and urbanization – rural-urban wage differentials, and agricultural involution – hold little evidence in northern Bolivia. Unlike other countries or regions elsewhere in Bolivia, rural-urban migrants have not been forced off their land by the expansion of the *latifundio* sector, nor by the physical degradation of the environment. The rural 'push' rather roots in the rural areas' deficient educational and health facilities along with their general dearth of infrastructure. The frequently cited rubber collapse fuelled this 'push' by restricting rural employment opportunities. But it drained the pool of 'potential migrants' within a short period of time rather than altering the long-term migratory trend. Out-migrants were lured to Riberalta, *inter alia*, by the expanding job opportunities in the Brazil nut industry. These added to the town's yet existing urban 'pull'.

Theory suggests that rural-urban migration is part of the households' survival strategies. This prompts the question of their sustainability or, to use a more appropriate term, their 'security'. The difference is substantial:

> "The idea of livelihood 'security' places social and economic elements to the fore. Advocates see security as a more appropriate concept at the household level than sustainability. Both words add value:

[640] According to Bromley's definition (1988: 165), subsistence agriculture would not fall under the category 'work' since it is 'expenditure-reducing' but not 'income-generating'.

[641] Incomes of tree-finders and chainsaw operators clearly exceed the returns from the extraction of palm heart or Brazil nut.

households need to be secure, while the basis of their livelihood and that of others needs to be sustainable (environmentally, economically, institutionally and socially)" (Ashley and Carney 1999: 34).

In the previous sections it became evident that security of livelihood strategies is segregated by the educational background of the household heads and their spouses. Those with relatively high educational qualifications can assume an exclusively urban-based livelihood strategy based on career work. In contrast, the majority which is lacking these skills and which typically faces difficulties to secure sufficient earnings from urban casual work obtains security through rural income. As much as 38% of the sample population generate more than one-fourth of their total income in rural areas, and still 21% even more than the half. This confirms findings from a survey of migrant households in Rio Branco where 25% of the households derived more than half their income from the rural zone (Schwartzman 1992: 61).[642] Given the scarcity of available farmland in the urban surroundings, involvement in agriculture is an opportunity for only a few. As most lack the means of transport, maintenance of a plot or a parcel in far-off places hardly provides an alternative. It is therefore not astonishing that a substantial number of households continues to rely on the extraction of Brazil nut as the principal source of rural income.

The opportunities offered through participation in the Brazil nut harvest should not be seen in isolation. Though the extraction of palm heart or timber is a dry-season activity which does not collide with the *zafra*, decent income derived from the former may prevent a peri-urban household from gathering Brazil nuts. We found ample evidence that it is not predominantly the most economically disadvantaged who participate in the Brazil nut harvest. Rather than viewing the *zafra* as a last resort of the urban poor, we should adopt the notion that peri-urban households thoughtfully balance the pros and cons of whether or not to partake in a given year. This autonomous decision constitutes an integral component of the livelihood strategies of many ex-forest dwellers and *Riberalteños*, and can be viewed as a 'safety anchor' given each season's stable demand for *zafreros* and the modest but rather secure prospects for net gains. The appeal of both the *zafra* and the work in a *beneficiadora* might still surprise in view of the hardship involved and the comparatively low economic returns. But we have seen that viable alternatives are mostly out of reach. In addition, the actual gain from these activities is only one consideration among others; their allure also roots in the in-built availability of credit. Similar to rural small producers low-income groups in urban areas lack access to bank loans. The *habilito* provided to a *zafrero* or to a *quebradora* thus assumes paramount importance for the security of peri-urban livelihoods.[643]

Next to security considerations, the crucial importance of education in shaping the livelihood options of peri-urban dwellers merits further attention. In Southern Africa, for example, it was found that "secondary schools play a variety of roles impinging on urban-rural interdependence, with significant implications for sustainable development. ... Secondary education plays a critical role in shaping life-style aspirations and expectations, providing young people with skills, knowledge and values relating to ways of life which differ from those of previous generations" (Ansell 2000: 144). Precisely because ex-forest dwellers have been largely deprived of secondary education, they are the most dispossessed in urban society

[642] If only accounting for the migrant households in our sample, 23% relied for more than half of their total income on rural earnings.

[643] Security, however, is but one of the advantages of a *habilito* credit. It is also an indispensable means to secure purchases exceeding the amount of a few hundred *bolivianos*, such as furniture, special medical treatment, housing materials, etc. Similar observations were made in the Bolivian highlands where participation in labor migration was found to be critical for livelihoods, as it offers access to cash and goods which would not otherwise be available (Ansell 2000: 147).

as compared to extra-regional migrants or *Riberalteños*. The question remains whether the children of rural-urban migrants will face the same restrictions on the labor market as their parents; or whether they catch up with the offspring of the other two groups of origin given that they have the same access to education in town. The former's elevated drop out rates from primary or secondary education may cast a doubt on this prospect. Nonetheless it is likely that the enormous pool of young (peri-)urban students wants to seek out opportunities other than those available to their lower formally educated parents. Unmistakably, participation in secondary education is the key determinant of urban life chances in general and earning opportunities of rural-urban migrants in particular.

Higher formal education not only entails more 'security' but brings about a higher degree of stability. Reversely, households lacking such education need to rely on more volatile components of livelihood strategies that imply frequent residential changes. Our 1999 repeat survey, which aimed primarily at determining the households' participation in the *zafra* 1998/99, underpinned the low residential stability of peri-urban dwellers.[644] Even among those who had not moved, quite a few expressed their intent to do so in the near future.[645] This corresponds to the high number of potential migrants in the rural areas (see Stoian, in prep.). These migratory patterns are congruent with the general migration theory for Third World countries: rather than a 'once for all' move, people engage in a series of moves over their lifetime (cf. Gilbert and Gugler 1992: 79).

Residential mobility had also been observed on the rural-urban interface in the Bolivian highlands where "its population tended to be ephemeral, flitting from farm to town several times a week, or even daily, and the very definition of who were townsfolk was much more complicated ..." (Preston 1978: x). Though Preston dwells on rural small producers commuting to nearby urban marketplaces, we can extend his argument to the peri-urban dwellers of northern Bolivia. Here, gender segregation of households pursuing rural-based livelihood strategies – male engagement in extractivism or agriculture, female occupation as a housewife or urban income earner – renders the straightforward classification of 'rural' and 'urban' extremely difficult, if not impossible.[646] It is therefore worthwhile to reconsider the concept of 'urban forestry' *sensu lato*. When seeking to determine "the entire forest area influenced by the urban population" (Kuchelmeister 2000: 50), we realize that forest-based activities of Riberalta's peri-urban dwellers stretch out to the remotest pockets of the region, covering virtually the entire rural-urban continuum. The latter take little notion of urban or rural boundaries when leaving the urban realm to work an agricultural plot or to extract palm heart, Brazil nut, or timber, before returning to engage in urban casual work. Even when back in town, inherent links with the rural areas manifest in a high share of casual work related to the processing of forest products. Clinging to a rigid rural-urban dichotomy thus becomes obsolete. Instead, the widening of the concept of urban forestry to allow for the rural-urban

[644] Out of the total of 120 households, 14 households (12%) had relocated themselves between 1998 and 1999. Five each had left for the rural areas or another neighborhood, and three for a city outside the region. The whereabouts of the remaining household could not be determined.

[645] Among the nine potentially migrant households, four would opt for the rural area and five for a city, in particular Santa Cruz. Three households wanted to acquire a plot outside Riberalta so as to engage in agriculture. In six cases, the household head had assumed a long-term employment outside Riberalta, viz. on a *barraca* (3), in a Cobija-based sawmill (1), in Santa Cruz (1), or as a bus driver on various routes (1).

[646] Preston (1978: 4) faced similar challenges in the Bolivian highlands: "... the difference between farmers and townsfolk is sometimes more one of means of livelihood and relation to production than one of location. ... role differences become blurred when a man farms and his wife keeps a shop, and the family has two interests, which may at times conflict; those of a farmer and those of a town shopkeeper."

links related to the use of forests and forest products enables us to better appreciate the interdependence between an Amazon frontier town and its forest hinterland.

A broader concept of urban forestry should also incorporate a divergent notion of rural-urban interfaces. Drawing on Kirk's (1980) three-phase model of evolutionary processes expressed in their morphology, the rural-urban interface encountered in northern Bolivia can be classified as lingering between the first and the second phase. At Riberalta's very periphery, that is in *barrios* like *San Juan* or *1° de Diciembre,* we find the first phase prevailing: rural-urban migrants have formed insular urban nuclei whose linkages tend to lie out with the urban system. Housing depicts no significant differences between these neighborhoods and the rural areas.[647] The absence of electricity and other urban services adds to their rural character. In addition to morphological aspects, resemblance with rural life forms lies in the continued involvement in rural activities.[648] These tend to lose significance when the second phase of the rural-urban interface is reached. This becomes apparent in more advanced peripheral neighborhoods such as *Villa Don Carlos* and in particular on Riberalta's semi-periphery where, *inter alia*, *Los Almendros* is situated. Here, the process of consolidation involves both morphological and occupational aspects. Semi-peripheral neighborhoods have effectively been absorbed by the urban system. They form part of its zonal structure by being connected with the municipal power supply, the potable water system, and other urban amenities; and by increasingly adopting the appearance of the town's very center through improved housing, public squares, increased commercial activities, and the like. Correspondingly, occupations become more oriented toward the urban economy while reliance on rural income diminishes. These neighborhoods' higher share of households pursuing one of the two urban-based livelihood strategies thus signals that consolidation is ongoing.

Processes of consolidation and disarticulation take place at various levels, viz. individual, household, neighborhood, town, regional, national, and international. Many of these processes are interrelated and their disentanglement is often beyond the reach of empirical research. World-system scholars, especially when addressing development processes in Latin America, would be quick in seeing forces of the world-system at play when analyzing patterns of frontier urbanization and related migration. However, the ex-forest dwellers' move to the city is not tantamount with their pull into the world-economic system. Capital penetration and the incorporation of northern Bolivia into the world market have happened long before, viz. through the advance of the *quina* and rubber fronts. Subsequently, the peasantry has ceased to subsist in a world-economic vacuum but was integrated, albeit to varying degrees, into the national and international economy. This is another reason why their urban livelihoods are not fundamentally opposed to their rural living before. Rather than on aggregate level, we should seek the reasons for success or failure of rural-urban migrants at the individual and household level. Evidently, "the relative success of migration is due in large part to the fact that it is embedded in social relations" (Gilbert and Gugler 1992: 69). We have seen that new arrivals tend to be first accommodated by family members before they set out to attempt a separate living in town. That these attempts are often successful is due in part to their intimate relation

[647] It is sheer economic necessities rather than the deliberate preference for this type of housing that prevent many of those granted land under the Plan Social from constructing a more sophisticated house. The Urban Property Reform in 1954 had a similar outcome as many lots remained unbuilt or with buildings half finished because those who were allocated land faced a severe shortage of capital (Rojas 1972: 181).

[648] The continued reliance of rural-urban migrants on rural income can be interpreted as their resistance to the pressure for return migration. Thus they pursue a strategy opposite to that of rural-based vendors in a small-city market in Guatemala: many of them use the urban market and the resulting income as a means of retaining rural residence, rather than facilitating migration to the city (Swetnam 1990: 261).

with Riberalta long before they finally move: even prior to the significant expansion of rural roads rural dwellers frequently traveled to Riberalta by means of river transport. Unlike their counterparts in other Latin American cities, rural-urban migrants in northern Bolivia thus had a good idea of what urban life is like before they made the move. More importantly, they have been part of an network of social relations that bridged the rural-urban divide.

Though rural-urban migrants do not only get into touch with the world-system upon their arrival to town, they are generally not conscious of the world-system forces that shape their livelihoods. In fact, both the NTFP industry and other sectors of the economy are highly contingent on the commodity prices in international markets. As we have seen in Section 3.8, it is in particular the earnings from the Brazil nut industry that are reinvested within the region and hence strongly determine the demand for labor across the economy as a whole. What manifests as consolidation in times of flourishing trade might turn into its contrary when a bust succeeds a boom. Consciously or not, Riberalta's population along with its economy are part of a highly dynamic system, most of whose driving forces lie beyond their reach. Certain stability emanates from Riberalta's continued role as a service center linking the rural hinterland to international markets for extractive products. The town also provides a regional market for agricultural produce and, to a lesser extent, forest products such as medicinal plants. Moreover, it functions as center for governmental and non-governmental development initiatives and constitutes the pole for private investment. This primacy explains to a large extent Riberalta's appeal to regional forest dwellers and people from outside the region. However, these factors combined might contribute to 'overurbanization', i.e. more urban than warranted by the level of economic development (Firebaugh 1979: 212).

In the introductory section of this chapter we have seen that the concept of overurbanization is highly value-laden and principally prone to 'worldmaking' (see Section 1.3.2). It is very likely that the overurbanized 'worlds' made by outsiders differ considerably from the local population's vision of an urban living. Before dwelling on this point in more detail, we should recall the unmistakable 'facts': Rural-urban migrants show the highest contingency on NTFP-based income, as do households whose principal members exhibit low educational levels. Being deprived of employment opportunities which require higher formal skills, these groups rely on the NTFP sector given its high demand for unskilled labor. As a result, the level of formal education is the key determinant of income formation among peri-urban dwellers, particularly as regards the income derived from NTFPs.

However 'objective' this 'knowledge' may be (cf. Popper 1972), we immediately enter the realm of 'worldmaking' as soon as we attempt an interpretation. Outsiders, for example, may be deterred by the appearance of Riberalta's peripheral neighborhoods, disparaging them as slum areas[649] and seeing little perspectives for the improvement of what they deem precarious conditions in terms of housing, employment, and overall development. Others may be inclined to make a different 'world' by trusting in the adaptive capabilities of the households concerned and the foresight of local political and economic stakeholders. They would view the Plan Social as an incomplete but nonetheless promising attempt to provide the more needy

[649] Referring in particular to recent developments in Belém, Manaus and Porto Velho, Browder and Godfrey (1997: 130) see the "process of 'peri-urbanization'" reflected in the expansion of "squatter settlements", or the "spontaneous emergence of peripheral shantytowns": "Whatever the local terminology, the peripheral shantytowns exhibit abundant social problems, public health dangers, and deficiencies of physical infrastructure." But what seems to reflect an undifferentiated preconception continues, "Yet the squatter settlements in Amazonia do not conform to many of the negative stereotypes associated with marginality theories ...".

of the urban – and still to some extent rural – society with a basis for a less precarious urban livelihood. In addition, they would discern the signs of consolidation, be it improved housing and enhanced infrastructure at *barrio* level, or increased opportunities to benefit from the variety of urban services – above all basic health care and adequate schooling – at household level. It needs to be stressed that the regional population principally has access to essential services only in town (Stoian, in prep.); a situation that will not change for a long time to come.

Those who advocate a rural living in alleged harmony with the environment need first to resolve the rural population's urgent need for schooling, health care, transportation, etc. Firebaugh (1979: 212-3) argues on a similar line: "We should not assume that push migration (that is, migration stemming from deficiencies in the rural sending areas rather than from the attractions of the urban receiving areas) necessarily leads to a harmful imbalance between level of urbanization and level of economic growth." In fact, northern Bolivia has witnessed a high interdependence between out-migration from the rural areas and the expansion of employment opportunities in urban-based processing plants for NTFPs. Though living conditions in most of the new neighborhoods are far from being satisfactory for the majority of their residents, consolidation processes in less recently founded *barrios* point to the adaptive capability of the urban setting. There is little evidence that either the town's newcomers or local government institutions generally lack the means, skills, and capabilities to cope with the demands arising from urban growth on the periphery. Imbalances with the town's core do exist but they will decrease in the course of time, unless a renewed crisis of the region's extractive economy which cannot be buffered by the exploitation of alternate forest products undermines the basis of the rural *and* urban economy.

Those who cling to the concept of 'overurbanization' should bear in mind that the alternative to it may be worse than 'overurbanization': if the 'excess' people do not reside in urban areas, they must reside in non-urban areas (Firebaugh 1979: 213). In the case of northern Bolivia, this would translate into urban-rural migration which, to a certain extent, is already underway. Deprived of the sponge effect of Amazonian urbanization which saves part of the forests from further deforestation (Smith *et al.* 1995: 50), the likely outcome is rather obvious: regional return migrants would reengage in subsistence agriculture which would claim its share from the forest. Those who would return to their homes outside the region would take along their skills and the capital accumulated through involvement in career work and/or commerce.

In terms of 'contributions of non-timber forest products to socio-economic development', this chapter can be summarized as follows: The recent influx of rural-urban migrants to Riberalta led to a gross conversion of the peasantry into an urban-based proletariat. Contrary to theory, they were not expelled by large landowners or agro-industrial estates but moved 'voluntarily' in search of better access to work, urban-based services, and in particular educational and health facilities. Probably more than in any other respect, this had a tremendous impact on the role of gender within the household. When living in the rural area, women chiefly looked after the agricultural plots – in addition to child-rearing and engaging in other household tasks – but rarely contributed directly to the household's cash income. This has dramatically changed in the urban area where they contribute significantly to the monetary household budget.[650] At the same time, male household heads have converted from rural small producers working essentially to meet subsistence needs to an urban proletariat depending to a great

[650] Yet in terms of career prospects, the female workforce is the most disenfranchised group (Verheule 1998: 83).

extent on the casual labor market. To what extent higher esteem accrues to women who contribute significantly to the household's cash income remains open, as does the question what bearing this has on household decision-making. Gender-related shifts of power within the household need to account for the higher burden women in peripheral neighborhoods have as compared to the more tranquil life of women in the rural areas (cf. Coesmans and Medina 1997). It could well be the case that the most obvious developmental return from rural-urban migration accrues to the migrants' children. They are the ones who are likely to benefit from enhanced formal education, provided that they and their parents make an effort to make use of the educational facilities available in town.

6

BEYOND THE RURAL-URBAN DICHOTOMY: SPATIAL DIVERSIFICATION OF EXTRACTIVE ECONOMIES

Regrettably, and we have to stress that—yesterday as today—it is evident that a lack of knowledge is maintained that the country has about its Amazon region and, up to the present, irrespective of who governs, the state has not adopted decisions, let alone initiatives, that translate into serious policies aiming at incorporating the region into the process of national development and continental integration.

Said Zeitum López
Amazonía Boliviana, 1991
(p. 85)

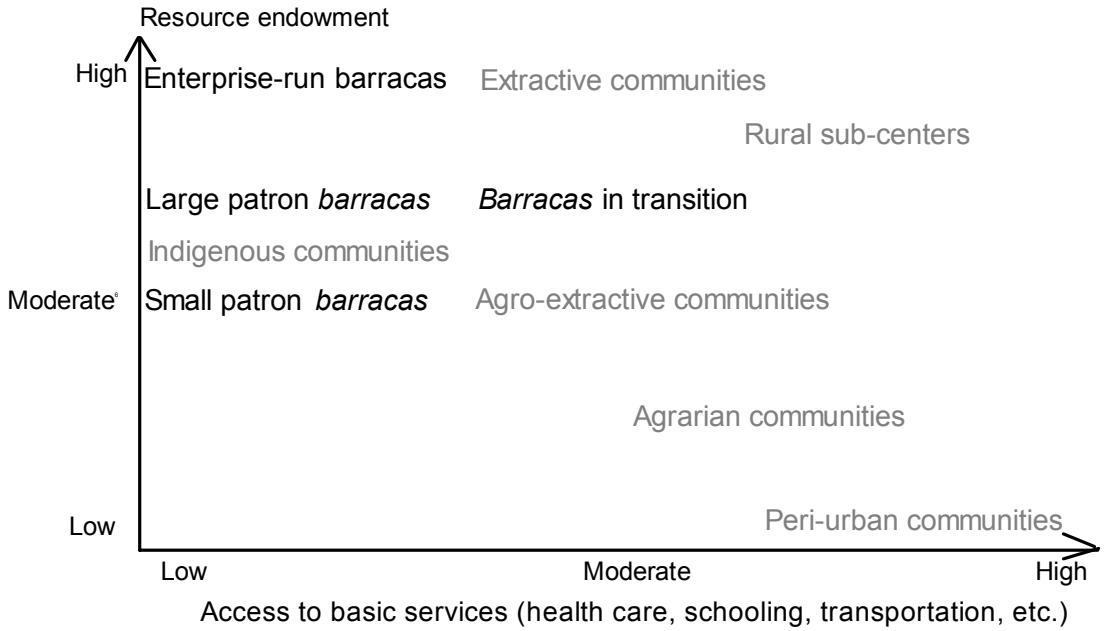
6.1 Making the best of two worlds: adjusting the trade-offs between resource endowment and access to urban amenities

Before embarking on the multi-facetted aspects of livelihood systems that go beyond the rural-urban divide through dual residence and temporary migration, we shall briefly clarify the concept of space. From a world-systems perspective, one of the key lessons is that space does not simply exist but is produced (Steinberg 1998: 19). The expansive nature of the world capitalist system is seen as the driving force in this process. The places thus produced are understood as being dominated by core or peripheral production processes, or, when they contain a relatively even mix, these are termed 'semi-peripheral' (ibid.). We have seen earlier, that such a clear-cut picture does not reflect the complex reality of spatial occupation in northern Bolivia; nor does its rural area live up to the assumed transition from small peasant holdings into agro-industrial estates through the expansion of capitalist relations of production in the countryside. On the contrary, the independent *campesino* sector has been strengthened through various factors: 1) the major reshuffling of the rural population from the *barracas* to the independent communities; 2) road construction that not only increased the access of the rural population but also of various intermediaries and itinerant traders whose appearance has brought about the change from the single-power domain of the patrons to the multiple-power domain of a multitude of stakeholders; 3) legal reforms that facilitate the access to legal land titles and usufruct rights on the territories traditionally claimed; and 4) the recent booms in the Brazil nut and palm heart industries that increased the competition for raw material, as a result of which prices for the principal commodities of rural small producers have risen considerably.

Related to the concept of space is that of the rural-urban dichotomy which has played a large role in social theory, in particular in sociology (Goldschmidt 1997: vii). While there is a growing body of literature on peasant life in rural communities, cities never ceased to attract the attention of sociologists and urban anthropologists alike. The schism between rural and urban life rests on the assumption that there is a clear division between the two worlds: self-confined, quasi-autonomous rural producers in more or less remote areas on the one hand and urban citizens fully incorporated in the nation state and occupationally specialized on the other. As much this dichotomy has been arguable in pre-globalization environments, as doubtfully it is applied to settings in which areas as remote as northern Bolivia have been incorporated – willingly or unwillingly, consciously or not – into the world economy.

As shown in Chapter 4, there is virtually no rural settlement in the northern Bolivian Amazon which would not supply agricultural and/or forest products to the market and thus be linked via various intermediary levels to the international economy. The region depicts a variety of resource use and livelihood situations along the continuum from the remotest, non-permanently populated areas, via less distant yet economically remote parts, resource poorer and more densely populated areas closer to town, to the very center of the urban economy. The distinguishing principle of the regional patterns are the trade-offs between resource endowment and access to basic services, such as health care, schooling, transportation, and local governments (Figure 6-1).

Figure 6-1 Trade-offs between resource endowment and access to basic services, by type of rural settlement in northern Bolivia.



Source: Own elaboration.

Rural dwellers can principally make a spatial choice along a continuum from remote forest settlements to independent communities in the vicinity of town. In the case of the rather remote extractive communities they typically face good *de facto* access to land and in particular forest resources, but suffer from low infrastructure development as reflected in poor communications, scarce local government facilities, and deficient educational and health services. In independent communities close to town, these facilities and services are rather

readily available, but both *de facto* and *de jure* access to land is highly constrained due to the higher population density and competition for land between rural small producers and urban-based farmers or cattle ranchers.

Broadly speaking, independent communities have higher access to basic services and facilities, while *barracas* are better endowed with natural resources (Figure 6-1). In the case of the latter, of course, it is the enterprise or patron who benefit from high resource endowment. This is why in the truly remote areas there is hardly any permanent population left, save for the indigenous communities which prove once more the odd man out. Most of their inhabitants find themselves relocated in areas otherwise occupied by *barracas* where they are deprived of access to urban services. It is here where the indigenous groups remaining in the region can pursue a rather 'trouble-free' living – to avoid the word 'traditional' lifestyle.[651] For evident reasons, the least favorable setting[652] – low access to either natural resources or urban amenities – has largely been exempted from human occupation. The most favorable location, on the other hand, is occupied by rural sub-centers. They are highly endowed with natural resources in their forest surroundings without compromising good access to basic services. This fact largely explains their appeal for the rural population which, however, is a rather recent phenomenon given that until the early 1990s most of them had been dominated by patrons or powerful family clans. Following central place theory[653], these rural sub-centers are bound to play a key role for rural development through their increasing importance as market place and as an interface between the resource-delivering nodes further upstream and the resource-consuming urban centers. The latter, in turn, constitute chiefly a transitional stop for regional products awaiting downstream processing before being delivered to still larger market places further down the marketing chain.

The expected growth of the rural sub-centers or 'rural service centers', to apply a term of Rondinelli (1980: 4), can further be stimulated through the reallocation of public spending. While it is obvious that decent health care, educational and other services cannot be provided to the outermost hut of a forest-based extractor, it is not prudent to invest all resources available only in the betterment of the infrastructure provided in intermediate-sized cities like Riberalta, or small towns, such as Cobija or Guayaramerín. If the rural-urban migratory flow is to be slowed down, public investments also need to be allocated to rural sub-centers in order to enhance the level of services they offer to the rural hinterland. Care should be taken not to disrupt the new arrivals in rural sub-centers too radically from their former modes of production. It has been demonstrated that self-sufficiency in agriculture plays a pivotal role in most rural livelihood strategies (Stoian, in prep.). It is therefore import to provide the

[651] We have seen earlier that acculturation processes claimed a heavy toll on what might have been their 'traditional' life style before the great rubber boom.

[652] Under this category fall, for example, swampy areas or savanna islands in the remote pockets of the region.

[653] Central place theory can be summarized as follows (Plattner 1989: 182-4): Based on a featureless landscape without major obstacles, the population of a region is assumed to be evenly distributed among 'lowest level' agricultural settlements without markets. The theory assumes that the population's commercial activity is economically motivated, that the region shows no social or political barriers to trade, and that traders are freely competitive so that markets can arise on the landscape in response to purely economic forces. Accordingly, a constant demand for goods and services is evenly distributed across a featureless landscape, as are the markets at which the population will shop. With demand as a variable distributed in space, the consumers with identical 'demands' and opportunity costs are assumed to buy decreasing amounts of the same merchandise with increasing distance from the center, until sales drop to zero at some distance from it. In effect, there is a 'spatial demand cone': demand is believed to be highest 'at the top', i.e. in the densely populated zone close to the center, whereas it decreases towards 'the bottom', that is the less populated areas at increasing distance from the center.

immigrants in these centers with access to agricultural plots, requiring a land allocation policy that allows for an adequate area of forest fallows as an integral component of the land use system. Such a policy would not reproduce the constraints which rural-urban migrants face at the peripheries of the regional urban centers, relying mostly on wage labor for their urban survival.

An integrated regional spatial system *sensu* Rondinelli (1980: 4) would provide the following services to the northern Bolivian Amazon:

(1) extended markets for agricultural and forest produce, thereby raising rural income

(2) more widespread distribution of education, health, and rural extension services, as well as rural electrification along with better communications and transportation

(3) creation of rural employment opportunities, in particular in agro(forestry)-processing, small-scale manufacturing, and cottage industries making use of locally available resources

(4) slow down the rate and pattern of rural-urban migration.

Despite the increasing knowledge of rural-urban links little is done on the planning level to realize the potential synergies between rural and urban areas or, in the terms of Rondinelli (1980: 4), the "mutually beneficial relationships between urban centers and the countryside". Worse, "urban residents and the urban educated may fail to see adequately the interdependencies which exist between man and nature, especially in rural settings. If the urban educated become public decision-makers, they may propose technocratic solutions for the economic transformation of the countryside and these may fail to take account of ecological interdependence" (Tisdell 1991: 72). Thus there continues to exist a "deep divide between urban planning, which is mostly industrial in its orientation and inward-looking in its concerns, and rural planning, which still tends to view rural as an aspatial agriculture sector issue and remains suspicious of the city and urban planners" (Douglass 2000: 4).

After having addressed the salient features of the rural-urban continuum from the rural dwellers' perspective, we shall turn to the urban viewpoint. The impressive influx of rural-urban migrants – not only after the rubber collapse but over the past decades – and the continued participation of the new arrivals[654] in extractive and/or agricultural activities clearly shows that a considerable amount of (peri-)urban households seeks to make the best of two worlds. They gain access to town-based facilities in the schooling, health, and local government sectors without losing income opportunities in the extractive economies and, to a lesser extent, food security by maintaining agricultural plots. Even though the seasonal moves to the rural areas may pose hardship to some, they also constitute a livelihood strategy which many actively pursue beyond sheer economic necessity.

As essential residential mobility of extractor populations is to secure a rural or peri-urban livelihood, as problematic it may prove from a development point of view. The rural population's readiness for frequent moves is indeed one of the key features disregarded by the 'modern' advocates of extractive reserves. Allegretti is right when pleading that "extractivism should be understood as an activity paradigmatic of sustainable development, in that it

[654] It needs to be stressed that many households do not migrate in their entirety. At least in an initial phase, only the wife might move with the children to town, while her husband stays in the rural area; or *vice versa*, the men seeks out his opportunities in town while other household members continue to work a parcel in the countryside.

conceives natural and environmental resources as productive resources whose conservation depends upon the social and economic life of the inhabitants of this [Amazonian] region" (1994: 16). Yet her conclusion that this activity is realized best within the framework of extractive reserves (ibid.) is not quite compelling. In addition to the restrictions on alternative land use imposed by legal requirements[655], the concept of extractive reserves implicitly entails residential stability of their inhabitants; a stability simply not given in most of Amazonia.

6.2 Urban 'ownership' of forest land: urban profit at rural expense?

This study has proven extensively that it is not warranted to refer to patron-client, *latifundio-minifundio*, capitalist-peasant relationships in simple terms of exploitation. Rather, we should recognize their various facets, the interdependencies between groups of different economic and political power and, most importantly, the dynamism in their relations. Their interactions frequently stretch across the rural-urban divide as patrons, merchants and entrepreneurs tend to be urban-based while a good deal of NTFP extractors is found among the rural population. Reliance on NTFPs for household income in the rural areas often exceeds 50 percent of the total household budget while, for the time being, timber income is of minor importance (Stoian, in prep.). "The significance of non-timber products for specific local communities becomes clearer when it is considered that timber is exploited by large firms, whereas non-timber products are usually produced by local residents of the forests, and that processing of these products is a labour-intensive activity" (UNCTAD 1994: 23). This general picture is also true in the northern Bolivian Amazon. In fact, "harvesting systems for non-timber products usually leave more benefits in the hands of local communities than is the case with industrial timber exploitation where benefits accrue to urban-based entrepreneurs" (Sayer 1990: 39).

The relatively high shares of benefits captured by both rural and urban NTFP extractors in northern Bolivia do not reflect the general picture of NTFP use worldwide. The dynamics of non-timber forest exploitation abounds with examples where "when a forest acquires greater value in the society, it is appropriated by external entrepreneurs at the expense of local communities" (Dove 1993: 23). This pessimistic view cannot be shared for northern Bolivia. While it is true that the recent boom in the Brazil nut and palm heart industries primarily benefited the urban areas, it is certainly not true that these benefits were grossly made at the expense of the rural hinterland. As shown in Chapter 3, a significant amount of profit accruing from the thriving NTFP industry was spent in the rural areas of the region. The question is not whether any profit trickled down to the rural producers but what kind of stimulus these monetary transactions provided? In the urban areas, in particular in Riberalta, a good part of economic growth owes to the surplus from the NTFP industry. In the rural areas, such growth is less discernible even though the recent demographic stabilization of the rural population points to the fact that the overall appeal of a rural living has not diminished to a great extent, as might have been expected after the rubber collapse.

If focusing on rural development we face a dilemma, as pointed out by Nyerere (1987: 386) for the case of Tanzania:

[655] Typically, timber extraction other than for domestic consumption and forest clearing for cattle ranching are legally prohibited in extractive reserves.

> "Our emphasis on money and industries has made us concentrate on urban development. We recognize that we do not have enough money to bring the kind of development to each village which would benefit everybody. We also know that we cannot establish an industry in each village and through this means effect a rise in the real incomes of the people. For these reasons we spend most of our money in the urban areas and our industries are established in the towns."

Without doing harm to Nyerere's argument we can extend it to most rural areas of the South and, in particular, to the case of Bolivia. He continues to argue that urban development investments are mainly based on (foreign) loans without which the urban areas would be enabled to generate the kind of economic development necessary to pay them back. Instead, it is the rural areas by means of their agricultural production "who pay the bill" (ibid.: 386-7):

> "Although when we talk of exploitation we usually think of capitalists, we should not forget that there are many fish in the sea. ... We can put the capitalist and feudalists on the one side, and the farmers and workers on the other. But we can also divide the people into urban dwellers on one side and those who live in the rural areas on the other. If we are not careful we might get to the position where the real exploitation ... is that of the town dwellers exploiting the peasants."

Certainly the situation in northern Bolivia is not as drastic as the one described by Nyerere, not least because the strict dichotomy between town dwellers and peasants simply does not exist. But it is true that notable portions of forest land in northern Bolivia are subject to urban 'ownership', i.e. claims of urban-based patrons and firms. In addition to the larger *barracas*, most of the cattle ranches are owned by town dwellers and even in independent communities it is not uncommon that individual parcels are looked after by a caretaker on behalf of an urban-based owner. Absentee landlords not only signify limited local control of forest resources but may imply urban profit at rural expense. Urban-based land 'owners' are believed to have little or no interest in the general well-being of the people close to the resource base, thus severing the link between man and environment (Tisdell 1991: 73) and undermining 'synchronic solidarity' (Sachs 1986: 218).[656]

The question of urban ownership at rural expense also needs to touch upon the issue of land tenure and access to the forest resources. In fact, insecure tenure rights are frequently cited as a major obstacle to the sustainable natural resource use. It was Amartya Sen who suggested the concept of 'entitlements', i.e. the legally assured access to land and resources: "The focus on entitlement has the effect of emphasizing legal rights. Other relevant factors, for example market forces, can be seen as operating *through* a system of legal relations (ownership rights, contractual obligations, legal exchanges, etc.)" (Sen 1987: 223). However, in regions such as northern Bolivia where the presence of the state has long been negligible and hence law enforcement notoriously weak, an entitlement concept based on legal rules and regulations is inapt. Instead, it is crucial to examine *de facto* access to land and resources, as well as the institutions governing arrangements based on customary rights. Though I cannot go into detail here – this will be the task of the second phase of the CIFOR-BMZ collaboration mentioned earlier (cf. CIFOR 1999) – some issues are worthwhile to be addressed.

From a legal point of view, most forest land in northern Bolivia is state property. In recent years, state ownership of forest land has been increasingly criticized as disenfranchising the traditional users through a rejection of their indigenous management systems (Richards 1997). "Such local management regimes have been unable to survive the superimposition of economically motivated or market-driven management practices which have been introduced

[656] 'Synchronic solidarity' differs from 'diachronic solidarity' in that the latter stands for the actual landlords' wish to secure future access to the resource base for members of the own family, clan or class, while the former extends today's rights to access resources to people other than the own family, clan or class (Sachs 1986: 218).

by the state in its nominal quest for efficiency" (Carney and Farrington 1999: 12). Interestingly, in northern Bolivia the situation is rather the other way round. Despite the government's increasing efforts to impose state control on the forest resources, 'traditional' management practices – including both small-scale individual or communal resource management and large-scale forest product extraction controlled by estate owners – persist the way they have been for almost a century. There is no doubt that these traditional practices are economically motivated and market-driven.

It seems rather the sheer size of the region and its – physical and political – remoteness and inaccessibility that effectively counteract the state's endeavor to control the forest resources. Carney and Farrington (1999: 18) concede that "in the absence of effective state management ..., pre-existing indigenous management regimes have frequently persisted. These can be effective, even where they are not equitable. Perhaps their main advantage lies in their flexibility and the fact that they can evolve to embrace change as it occurs." The last point deserves special attention for the case of northern Bolivia. It is precisely this flexibility to rapidly respond to the changes in the international markets for rubber, Brazil nuts, and palm hearts that made the extractive economy of northern Bolivia survive. Despite all its faults, it were investments done by the private sector – individual patrons or firms – that ensured that the region's population can continue to make a living based on gathering and processing of forest products.

Customary rights (*derechos consuetudinarios*) govern not only the access of the rubber and Brazil nut 'barons' to the forest resources in northern Bolivia but also the right of entry to rural small producers. "Tenure rights and resource management practices are embedded in a social context of kinship, village institutions and cultural traditions and are expressed through customary law. By customary law we can distinguish concepts of ownership and usufruct rights which range from rights and responsibilities vested in the community, a clan or lineage group to rights vested in individual families" (De Beer and McDermott 1996: 141). In northern Bolivia, land tenure in independent communities is predominantly rooted in small parcels, generally ranging from 50 to 150 ha, to which individual families have exclusive rights. The exception, though prevailing among indigenous communities, is a community-based concept of land tenure, entitling all community members to use forest products as a common property of the village. Consequently, the appropriation of forest resources by independent rural producers in northern Bolivia resembles that in the Brazilian extractive reserves, with "the land being collectively appropriated but the resources allocated to different families in the community" (Lescure *et al.* 1994: 74).[657]

Individual and community-based systems are both characterized by the low notion of legal land property. Contrary to the prevailing view on the paramount importance of such property rights (see Pendelton 1992: 256, Ruiz Pérez *et al.* 1993: 60, Southgate *et al.* 1996: 79), the presence or absence of legal land titles have had little practical bearing on land use in northern Bolivia to date. Access to land and forest resources continues to be chiefly governed by institutional arrangements at community level regardless of the general legal status.[658] Boundary conflicts are rare among the residents themselves or across independent

[657] Similar findings are reported from the Amazon estuary where "there is no common property on Combu [island]; all land is owned by individual families" (Anderson and Ioris 1992a: 347).

[658] Similar observations were made in Peruvian Amazonia, where in the Department of Loreto communal rules regulate the extraction of forest products from reserves despite the lack of legal status (Pinedo-Vasquez *et al.* 1990: 406). In the Brazilian Amazon, long-term personalized allocation of the resource is in use in the *castanhais*, that is the Brazil nut stands, which seems to be accepted by everyone (Lescure *et al.* 1994: 73).

communities,[659] but arise in areas where large landowners or *granjeros* compete for land in the immediate surroundings of a community. It is therefore not the lack of a legal land title but the denial of adequate access to land that may force a villager to leave a community. Similar conflicts are reported from Brazilian Amazonia where "in the vicinity of the urban centres, whatever their size, merchants and cattlemen tend to push the small producer towards the interior, and conflicts over the use of land among protagonists are numerous and sometimes violent" (Lescure *et al.* 1994: 73). In Acre, on the other hand, many rubber tappers migrated to cities, abandoning their lots to which only recently they had been granted legal land titles (Allegretti 1990: 257).[660] These examples underscore that in large parts of Western Amazonia the factors underlying rural exodus or permanence in the forest reach far beyond the issue of land titles.

Having stressed the hitherto low relevance of *de jure* land ownership and the high importance of *de facto* access to land, we may feel prompted to scrutinize the genuineness of the customary law on which most resource management in northern Bolivia is based. Probably there is little dispute that the most genuine claim could be made by the region's indigenous people. But how genuine are these groups as such? The *Araona*, for instance, once "the most extensive and expanded indigenous group of the region" were reduced to a group of less than one hundred at the end of the 20th century (VAIPO 1998). They can hardly be called an unadulterated group given that by 1972 only two "genuine" *Araona* had survived. The male of this family married to a *Cavineño* women such that all descendants of the *Araona* today are of mixed *Araona* and *Cavineño* origin (Pitman *et al.* 1972: 3). Even more tricky is the issue how best to determine their land claims, as "the *Araona* are semi-nomadic. They all live in the same locality. There is no change in community and until white man came there was frequent change in location as the land was cultivated for *chacos*. Now, however, most live in the same location but travel to other areas. This is done to make *chacos*, etc." (ibid.: 2). Moreover, the *Araona* lived originally dispersed along the Madre de Dios River (Armentia 1883: 74). Despite that fact and regardless their small number, they were awarded a community territory (TCO) of 95,036 ha at the upper Manupare River in April 1997 (CPTI-CIDOB 1997).[661] This example illustrates that however warranted indigenous land claims are in principle, the obvious facts on which to base decisions with respect to land distribution are rather scarce.

With indigenous communities being located within the *barraca* sector, land conflicts arise especially between them and the patrons and enterprises. The latter's efforts for vertical integration have been generally interpreted as "a concentration of production resulting in the marginalization of small producers" (Assies 1997: 74).[662] This view contrasts the notion of

[659] Mutual respect of individual parcels is also typical for Acre where "each landholding is generally recognized and respected by all residents in a given area" (Allegretti 1990: 258).

[660] Allegretti associates this form of rural-urban migration with the small size of the lots granted. Unlike the 300 to 500 ha traditionally worked by autonomous rubber tappers, the families in question received individual lots ranging from 60 to 100 ha (1990: 257-8). However, the case of northern Bolivia, in particular the Province of Vaca Diez, depicts that even this smaller size of land holding can well sustain a family. Abandonment of the Acre lots needs therefore to be reviewed within the broader context of the rural economy and the general pull of the cities.

[661] Difficulties to underpin land claims arise from the virtual absence of legal land titles. In 1999, INRA's scrutiny of land claims regarding the multiethnic territory of *Esse Ejja*, *Tacana* and *Cavineño* along the Beni River (*Territorio Multiétnico II*) revealed that 95% of the alleged landowners dispersed over the 441,470 km² territory were lacking the legal basis for their landed property (Anonymus 1999).

[662] That financially powerful firms seek to get hold of vast tracts of former rubber forests is not unique to northern Bolivia. "In the 1960s, the capitalists from the southern part of Brazil started buying land from the old *seringalistas* (owners of rubber areas). In order to guarantee their legal titles to these lands they started burning

the "democratization of the Brazil nut economy" (DHV 1993b: 36), that is the increasing weight of the *campesino* sector in the Brazil nut trade. These opposite views of power shifts in the Brazil nut industry provide a prominent example of 'worldmaking' as addressed in Chapter 1.3.2. Though in this respect the 'facts' are rather unmistakable, as seen in Chapter 3, we face the difficulty to determine whether we are confronted with two right versions of two actual 'worlds', or rather between one right and one wrong version; even if both versions proved 'right', this would not imply that both alternatives were equally good for the respective context (cf. Goodman 1978: 20-1). In this example, I believe the latter is the case, as there is little evidence for concentration processes in today's extractive economy of northern Bolivia. On the contrary, we face with a highly diverse structure of NTFP suppliers as both the *barraca* and *campesino* sector show a great deal of variation. Monopolization of the NTFP economy, as implicitly suggested by Assies (1997: 50), is clearly not at stake. One of the reasons is that oligopoly control requires not only the existence of high concentration levels but also the existence of significant barriers that prevent other firms or small producers from entering the market (Barham and Coomes 1996: 32). In northern Bolivia, however, none of these features truly applies to the present situation.

A further argument against 'high concentration levels' in the Brazil nut industry is the fact that at least 40% of the raw material is supplied by the independent *campesino* sector, a share that has been continuously increased over the past fifteen years. Evidently there are no actual barriers hindering newcomers to enter the market. Though most accessible Brazil nut stands are either controlled by independent communities or patrons, no more than approximately thirty percent of the actual production is harvested (cf. DHV 1993a). As demand is far from being saturated, anybody disposing of the capital and labor needed could principally enter the market by opening up one or more remote Brazil nut stands. This holds also true in the case of independent communities, provided their inhabitants would be eager to establish themselves in such remote sites. But given that in far-off places the trade-offs with regard to the access to basic services are highly unfavorable, this is not too realistic an option. This underpins the justification of a *barraca*-turned-forest concession system in the more distant areas which are not claimed by independent communities. That the concessionaires are likely to be urban-based is not an argument against: in the absence of a genuine interest of independent small producers, urban 'ownership' of remote forest sites does not imply "urban profit at rural expense".

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the forest and expelling the rubber tappers" (Diegues 1992). Unlike northern Bolivia where forest product extraction continues to be the principal land use, vast forest lands in Brazil have been converted to cattle pastures and agricultural land.

7

CONCLUSIONS

I wonder how anyone still wants to look for the single truth today. Everyone can have truth, but he or she should be conscious that it is invented.

Ute Guzzoni
Philosophische Abschiedsvorlesung, 2000

Though deliberately avoiding the shortsightedness of synchronic case studies, most of the findings presented here can only be understood as temporary manifestations of a larger development process whose future ramifications are almost impossible to predict. The recent downturn in the palm heart industry, which by the time of the field work was at its peak, provides just another example of the volatility of NTFP markets which defies even a mid-term prognosis. Northern Bolivia's NTFP industry, encompassing a multitude of stakeholders from the gatherer via intermediaries to laborers in the processing plants as well as their owners, has proven its adaptive capabilities several times over the past century. The question remains which are the factors that guarantee a certain degree of stability and which at the same time can be controlled at the regional level? In the first place, these would comprise NTFPs being embedded in livelihood systems based on agriculture *and* extractivism, enabling both rural and peri-urban populations to adjust the trade-offs between various income-generating and subsistence-oriented activities. Other factors are secure land tenure coupled with sufficient resource endowment and, finally, a rather equal distribution of benefits. On the other hand there are factors prone to undermine the security of extraction-based livelihood systems as well as the stability of the extractive economy as a whole, viz. volatile markets, exploitative labor relations, and overexploitation of the resource base. These factors shall be discussed from the viewpoint of NTFP development.

NTFP development, land tenure, and access to resources

Though northern Bolivia today is far from egalitarian access to land and hence natural resources, changes in land tenure stimulated by the rubber crises and supported through more recent legal and institutional reforms provide a basis for *more* 'broadly based and inclusive development'.[663] When analyzing tenure regimes, the theoretical framework of "entitlements to natural resources" as provided by Dietz (1996) is a helpful analytical tool. Proposed as one of the core concepts of political environmental geography, the concept puts the decision-making side of natural resources at center stage: "Pertaining to the various natural resources,

[663] Broadly based and inclusive development ensures minimum social justice and sustains democratization over the long run (Larrea and North 1997: 924).

entitlements encompass three rights: the right to own resources, the right to use resources and the right to intervene in resource situations" (ibid.: 41).

The related questions for the case of northern Bolivia can be answered straightforwardly: the right to own resources has long been insignificant in legal terms given the large-scale acceptance of *de facto* land tenure. Nowadays it is a key issue not only for the patrons and the peasant communities but in particular for the remaining indigenous peoples: Kaimowitz *et al.* (1998: 56) stress that "indigenous peoples' participation in municipal governments is one of several factors that has strengthened their territorial claims and helped defend their natural resources from undesired encroachment. Indigenous territorial rights do not guarantee sustainable resource management, but they may increase the chances for it, particularly with support from indigenous organizations, NGOs, and donor projects." Independent from the outcome of their territorial claims, the right to use (NTFP) resources and to intervene in resource use situations will hardly be altered, as most of the independent communities, whether indigenous or not, already dispose of these *de facto* rights.

Over the past years, even the long acknowledged *de facto* rights of the patrons have been seriously challenged, in particular in Pando Department. But the 'Vaca Diez bias', to which various research and development institutions of northern Bolivia succumb, blurs the view on these developments. Along the Puerto Rico-Porvenir highway, for instance, virtually all independent communities have split up their territory into private parcels of 500 ha each. This development was only made possible after the highway constructed in the early 1990s cut into the hinterland of *barracas* located on the Tahuamanu River. Deprived of their control of what used to be rubber posts and rubber centers, the patrons had no alternative but letting these communities go into independence. Endowed with 500 ha of pristine forest, the newly independent settlers had an advantageous point of departure in addition to the road connecting them with the departmental capital through a two-hour bus or truck ride. Along with their gained access to vast forest resources, these extractive communities display the highest NTFP income in the rural areas (Stoian, in prep.).

NTFP development and distribution of benefits

For the case of the Brazil nut industry it could be demonstrated that increased demand in the international market, manifested in rising prices, benefits not only the entrepreneurial class and intermediaries but trickles down to the NTFP extractors to a significant degree. It was in particular the competition for raw material in a booming NTFP industry that lead to a substantial increase in income on the part of the *zafreros*, even when accounting for inflation. In contrast, the piece-work rates of the largely female work force in the urban-based processing plants has been adjusted only slightly above the inflation rate. Apparently, competition for raw material among the *beneficiadoras* is more pronounced than competition for labor. In fact, the vast number of formally low-educated women and men at Riberalta's periphery constitutes a huge pool of readily available low-skilled labor. The decision to raise the reimbursement of the *zafreros* rather than that of the laborers in the *beneficiadora* is not only economically rational but could even be seen as appreciating the privation endured in the arduous harvest of Brazil nuts. This does not mean that the 12-13-hour day of an average *quebradora* stands for a comfortable way of generating the minimum income needed to ensure the household's economic survival. Rather, such differentiated reimbursement may account for the deficiency of basic infrastructure, facilities, and services on the *barracas* as compared to the urban setting.

When arguing that the distribution of benefits in the extractive economy of northern Bolivia is not as unequal as commonly anticipated, it does not mean that there is no scope for improvements. These are often of a strikingly pragmatic nature. When focussing on Brazil nut gatherers on the *barracas*, a lot can be done to enhance their working conditions and to provide them a better basis for reasonable earnings. As suggested in the committee meetings of the Voluntary Forest Certification Initiative (CFV), the forest-based shelters should be made more stable in order to protect both the *zafreros* and the raw material. Improved housing on the *barracas* reduces the amount of days of sickness which could further decrease by sufficient remedies available in the *barraca* stores. The prediction of annual production levels – the nuts' 14-16-month maturation process facilitates the prediction of next year's production already during the actual *zafra* – would help to make a more realistic planning of the number of gatherers actually needed on a given *barraca*. Average harvest levels per *zafrero* are well-known but of course a certain labor surplus is needed as long as some *zafreros* leave the *barraca* prematurely.

As far as the reasons for early leaves are beyond the reach of the *zafrero* – low natural production, sickness, lack of foodstuffs – the responsibility for improvements is clearly on the part of the patrons, contractors, and enterprises. It should also be possible to better organize the transport back to Riberalta once the *zafra* has terminated. One important aspect that reduces the actual benefits of urban-based Brazil nut gatherers is the delay of transport from the *barraca* back to town. It is frequently reported that individual gatherers, or entire families, have to wait several weeks for their return to Riberalta for want of river transportation.[664] During this time they have to rely on the overpriced foodstuffs on the *barraca* while being deprived of alternate income sources, unless they can engage in the transport of Brazil nut from the forest-based centers to the transshipment points of the *barracas*.[665] A remedy would be to either improve reliability of transportation or to provide the opportunity to work for daily wages on the *barraca*.

NTFP development and economic incentives for conservation

When examining the hypothesis of conservation *and* development through extractive activities, the issue of benefits sharing is critical. Freese (1997b: 16) summarizes the point in question as follows:

> "A commonly raised concern, particularly in the developing world, is that the resource owners/harvesters receive a small fraction compared to the intermediaries and retailers ... Clay (1997a, b) shows that harvesters in Amazonian Brazil receive, at best, 1 percent of the retail price of Brazil nuts, and 1-4 percent of the retail price of palm hearts, paid by buyers in the United States. In such circumstances, harvesters may have neither the economic incentive nor the financial means to implement sound management practices, and the value of the forest may be insufficient to deter alternative uses of land."

This view is one-dimensional for two reasons. First, Clay's findings are confined to the Brazilian Amazon in the early 1990s. In northern Bolivia, however, extractors of palm hearts and Brazil nuts received in the late 1990s 2-6% and 3-17% of the respective retail price in Europe. Second, even if Clay's findings could be generalized, a low percentage of the retail price earned on the part of the extractors is not the issue at stake. After all, what counts from

[664] Sometimes it is also the other way round: lack of transportation signifies late arrival on a *barraca*, involving the risk of many nuts already being harvested by others.

[665] Depending on the distance of the forest-based centers, the road conditions, and the means of transport, intra-*barraca* transport of Brazil nut can be a relatively lucrative income-generating activity. During the zafra 1998/99, for instance, a peri-urban resident included in the sample had a gross income of Bs.54 per day through the transport of 18 boxes of Brazil nuts (Bs.3/box) by means of a motorbike.

the harvester's perspective is the opportunity costs of labor arising from extractive activities. If these are low, as is often the case given the virtual absence of wage labor and other income opportunities in the extractive areas (Stoian, in prep.), there may well be an economic incentive not only to engage in these activities but also to carry them out in a largely sustainable fashion.

Admittedly, many NTFP resources are overexploited but, as we can deduct from the findings in Chapter 3, this is not due to lacking economic incentives. In other words, even if higher shares of the final sales price could be realized on the part of the extractors, it remains highly doubtful whether these would translate into more sustainable management practices. In view of the often versatile NTFP markets, it is even doubtful whether ecologically sustainable management practices pay off. Applied to the recent downturn in northern Bolivia's palm heart economy, it was – retrospectively – a very rational behavior to supply the expanding market with whatever *palmito* accessible in view of the lucrative prices. In the present situation, in which demand for palm heart is down at the level of the early 1990s, all preserved individuals, though fulfilling their ecological functions, would constitute an asset of foregone income.

NTFP development and overexploitation

In an analysis of the factors underlying tropical deforestation in Ecuador's Northwest it was found that the bulk of regional deforestation owes not, as often described in models about deforestation in Latin America, to powerful elites from outside the region but to local people expressing their vested interests (Sierra and Stallings 1998). They found evidence for the "development of coalitions of small-scale primary-producers and large-scale timber-industry to facilitate the extraction of forest resources and to take advantage of market opportunities" (ibid.: 137). Similar developments are likely in northern Bolivia, as the sheer need to monetize forest resources – be they small or large in scale – forces the vast majority of forest dwellers to make use of any opportunity provided by the market. What therefore is needed is a site and time specific revision of the conservation *and* development paradigm. It can simply not be expected that these two aims of tropical forest management are always and in any given setting harmonious. Rather, conservation and development should be primarily understood as conflicting aims that need to be prioritized in accordance with the various stakeholders' preferences. In this context conflicting interests are likely to arise. It will therefore be crucial to develop tools for conflict resolution, building up on local institutions and experiences in mediation.

In addition, romantic and idealistic views of rain forest management need to be reviewed. First, overexploitation of certain species over limited time and space does not necessarily jeopardize the species' survival nor principal biological functions of the forest. It needs to be borne in mind that both low and high remuneration for given forest products provide sufficient incentives for their overexploitation.[666] Consequently, it is probably the rule rather than the exception that a species is overexploited (cf. Vasquez and Gentry 1989). In this

[666] That resource depletion is inherent to both boom and bust cycles of NTFP marketing is also suggested by Browder (1992a). He argues that the boom stage prompts rational extractors to seek quick profits, knowing that such booms are ephemeral; in a bust stage, on the other hand, extractors are forced to "harvest the resource above sustainable thresholds to maintain their living standards". Richards (1993: 24) backs Browder's view only insofar as a given NTFP requires destructive harvesting such as, for example, the removal of apical buds for palm heart. However, Vasquez and Gentry (1989: 360) demonstrate that even in the case of species harvested in a sustainable fashion, harvesting techniques may turn from non-destructive to destructive as demand increases.

context, it is worthwhile to refer to the debate on 'sustainable' vs. 'secure' livelihoods. Some parties expressed their concern that in implementing sustainable livelihoods (SL) approaches too little attention is being paid to sustainability, particularly environmental sustainability. Others, however, are worried that the idea of SL might be too environmentally driven; they therefore prefer the concept of 'secure livelihoods' over that of 'sustainable livelihoods' (Ashley and Carney 1999: 43). Part of this security is believed to lie in secure land rights (e.g., Richards 1993: 24, Salafsky *et al.* 1993: 45). This view, however, is simplistic too, as it denies that even under secure tenure regimes extractor households may be forced to maximize income from their parcels. Their experience of volatile NTFP markets shows them that demand for a given product may exist only for a limited period of time, encouraging extraction levels beyond the rate of natural regeneration. Furthermore, oppressive debts and/or emergencies, such as severe diseases of a family member, leave little room to maneuver as they require immediate cash.

The impact of overexploitation not only depends on the species' autecology and its role within the ecosystem, but also on socio-economic parameters such as harvesting techniques and intensities and, often more important, market dynamics. Second, within the continuum from purely destructive forms of rain forest use, such as conversion to large-scale cattle ranches or mining of mineral deposits, to adapted forest use involving small-scale agroforestry and forest product extraction, the latter are clearly the preferable ones. To be overly concerned about the biological impact of overexploiting certain NTFPs may unduly distract the attention from more devastative forms of rain forest use and their underlying economic and political reasons.[667] Thus emphasis should be put on the exclusion of extensive habitat alteration while safeguarding the income-generating potential of tropical forests.

NTFP development and agriculture

Food insecurity has been a major problem in northern Bolivia for most of the 20th century (cf. Romanoff 1992). There were even traits of famine in times of the post-war rubber crisis (Gumucio *et al.* 1966: 4). Despite the regions rather poor soils, there is scope for the expansion and intensification of agriculture in northern Bolivia, and far more than the presently used area is considered suitable for agriculture, agroforestry or agro-pastoril land use (DHV 1993a: 6; see also Toniolo and Uhl 1995). Obviously, agricultural activities need to match with extractive activities and *vice versa*. Peaks in agricultural labor need coincide with the last month of the Brazil nut harvest but generally fit well into the extractive calendar. It is therefore claimed that "the great increase in agricultural productivity must constitute an essential requirement in every plan of economic development, since it constitutes the main condition for the elevation of the standard of living" (Gumucio *et al*. 1966: 74; my trans.).

There is general agreement that Amazonia's floodplains, called *várzea* in Brazil and *bajíos* in northern Bolivia, are most apt for agricultural development. It is also widely held that the agricultural potential of the upland or *terra firme* sites is extremely low, but recent evidence points to the fact that "even Amazonia's poorer soils are suitable for cultivation" (Roosevelt 1999: 372).[668] Especially in the Western Amazon, even the well drained sites may be of rather

[667] Browder (1992c: 229) argues on a similar line: "Regrettably, the inordinate emphasis being given to extractive reserves as a meaningful alternative to deforestation has deflected attention from the real tasks ahead for saving tropical forests."
[668] Tropical soils in Amazonia and elsewhere are generally less weathered than expected (Tricart 1972: *passim*).

recent alluvial origin due to the high geomorphologic dynamic of its intrinsic river system.[669] In the Peruvian Amazon, for example, present and previous floodplain formations cover 12% and 14.6% of the land surface, respectively (Salo *et al.* 1986: 254). A similar percentage is true of the northern Bolivian Amazon (see DHV 1993a: 6, ZONISIG 1997: 133). In general, "the floodplains may differ profoundly in water and soil chemistry, mode of alluvial sedimentation, and case-historical bio-geographical events" (Salo *et al.* 1986: 257). The resulting mosaic of (micro)sites supports various types of agriculture and/or agroforestry, especially when both sites and the species mix are carefully selected (cf. Schroth *et al.* 1999).

When seeking to determine the relative backwardness of agricultural development in northern Bolivia it is particularly instructive to relate to the adjacent states in the Peruvian and Brazilian Amazon. Government-induced efforts both in Peru and Brazil show that such a development can be initiated through public spending. The Brazilian state of Acre, for instance, had earmarked around one sixth of its total budget for agricultural development in the 1970s and 1980s (Schwartzman 1992: 61); in addition, several federal agencies funded programs relating to agricultural extension and promotion, credit, warehousing, and processing (ibid.). Similarly, Peruvian Amazonia benefited from government funds allocated to road construction, general infrastructure improvement, and rural extension programs (Coomes 1995). All this has been virtually absent in northern Bolivia and even the non-governmental sector has filled this gap only to a very limited extent. This explains to a great part that more sophisticated agroforestry techniques are still in their infancy, while agriculture proper is of a rudimentary type.

NTFP development and agroforestry

Northern Bolivia is still blessed with vast tracts of rain forest in an excellent state of preservation. Lacking, however, is a sound socio-economic basis for both rural and peri-urban livelihood systems. At present, varying accessibility of natural resources, scarcely developed infrastructure and underutilization of human resources impede socio-economic development. Given these restrictions, one of the few options feasible on a short to mid-term basis is the diversification of the agricultural economy through the refinement of agroforestry techniques. Once the rural areas are self-sufficient in food production, the vagaries of international markets for products like rubber, Brazil nuts, and palm hearts can more easily be compensated for. Diversification of the primary sector should include research on and development of other marketable forest products, such as palm-based products and medicinal plants, as well as various cash crops to be integrated into agroforestry systems.

The improvement of agricultural practices through agroforestry has been promoted as early as 1942, i.e. at the onset of the World-War II rubber boom: Melby (1942: 469), a great visionary of Amazonia's economy, argued, "Undoubtedly, a diversified extractive economy, resting on a solid agricultural foundation, would provide for the Amazon a far more reasonable development than would be possible under the sole rule of rubber." It needs to be stressed that a 'solid agricultural foundation' here should not be mistaken as large-scale clearing for agricultural schemes. Evidently, the constraints imposed by the poor chemical and at times physical properties of Amazonian soils need to be duly acknowledged when seeking to

[669] The large extent of Quaternary floodplain deposits means that *várzea* forests are more extensive than they appear in older vegetation maps; the *várzea* comprises about 25% of the area of Greater Amazonia (Roosevelt 1999: 372).

improve agricultural practices on the *terra firme*[670] or upland sites. Lessons can also be learned from the examples of Japanese agroforestry in both Brazil and Bolivia (e.g., Staniford 1973; Hiraoka 1980, 1989; Subler and Uhl 1990, Makabe 1999). In the times of the great rubber boom, a colony of some 300 Japanese immigrants had proven the potential of horticulture in the northern Bolivian Amazon: there was an outright boom of vegetables which filled up the market of Riberalta, as virtually every Japanese homestead disposed of an orchard (*huerta*) in which they grew vegetables alongside a wide array of fruit trees (Saucedo 1985: 8).

NTFP development and extractivism-agriculture labor shifts

In general the extractivism-agriculture labor shift is poorly understood. Neoclassical approaches, for example, suggest a linear development from extractivism to agriculture. Homma (1994: 51) holds that "while in the past plant extractivism drained manpower from agriculture, today it is the reverse, and it is agriculture that is draining manpower from extractivism." This evolutionary view fails to acknowledge the cyclic nature of such events. As the case of northern Bolivia shows, rural inhabitants carefully balance the trade-offs between agricultural and extractive activities, if not combining it with various degrees of wage labor (Stoian, in prep). In boom phases of the rubber economy, labor was indeed dedicated predominantly to rubber extraction. But as the booms turned into busts, such shifts were reversed, with agriculture gaining dominance. It is precisely this great flexibility that, in contrast to Homma's pessimistic view, allows agro-extractive populations to respond to varying economic opportunities or challenges (Lescure 1996: 200). In addition, agricultural activities were always more important for independent rural inhabitants as compared to those on the *barracas* working for a patron.

With respect to labor shifts, it is important to stress that it is not the rural areas *per se* which are in crisis, as otherwise the rural exodus would continue unabated. Rather, the traditional *barraca* economy has reached a deadlock, and parallel to its downturn the *campesino* sector experiences a boost. In fact, what has been considered a major drawback of the latter, viz. its large-scale exemption from the market economy save for one or to forest products, proves its stronghold. Rural livelihoods can respond to the vagaries of (NTFP) markets precisely because they largely root in subsistence production. In times of slack demand for their (forest) products, rural households can rely for a great part on subsistence production, ensuring food security and a minimum well-being. Peri-urban households, on the other hand, lack subsistence security and have to reproduce themselves predominantly or entirely by means of (casual) wage labor. In the case of rural livelihoods, the shifts between agriculture and extractivism need to be put in the limelight of NTFP development.

NTFP development and rural extension

Extension services need expansion in terms of both geographic coverage and thematic focus. Existing extension services that, given the virtual absence of state-borne extension services in the region, are largely provided by NGOs fail to duly reflect the large diversity of agro-extractive practices as encountered in the region. The messages promoted are often too rigid, putting sole emphasis on either enrichment planting with perennial species or livestock and seed improvement. Moreover, they are fixed in both timing and content such that the number of relevant messages for a diverse group of agro-extractive households is limited (cf. Carney

[670] "The terra firme occupies approximately 97 per cent of Amazonia and consists basically of upland, interfluvial areas away from the major rivers" (Frechione 1990: 130).

and Farrington 1999: 10). Worse, such services are confined in space and hardly reach to areas beyond the immediate surroundings of towns where virtually all NGOs are based. Limited coverage is due largely to the difficulty of access, but also owes partly to the low incentives for NGO staff to travel to more remote areas.

If rural extension is to be successful, it needs to address the specific needs of a variety of rural settlers rather than offering a single extension package in the specific area of expertise assembled by a given GO or NGO. The analysis of rural livelihood systems has shown that apart from the resource endowment of a given settlement and a household's access to these resources, it is the individual specialization of rural dwellers that determines in what activities a household engages (Stoian, in prep.). If NGOs offer a single extension package, it does not come by surprise that only a limited number of rural dwellers wants to participate. The way out is obvious: either an NGO diversifies its existing program or it seeks to collaborate with other institutions to make up for the deficiency in extension requested. Cooperative efforts, for instance, are doomed to fail when they do not allow for variations among those who are – more or less voluntarily – put under the umbrella of a donor-driven cooperative. Examples from the southern Bolivian Amazon show that cooperatives were not able to integrate all community members because the specific needs of semi-proletarian households, deriving a major part of cash income from wage labor, were not adequately addressed (Gill 1985: 245).

When seeking to promote social organizations at grassroots level, care has to be taken that externally induced cooperativism does not undermine existing local peasant organizations, nor aggravate socioeconomic differentiation among community residents beyond a scale that could be considered mutually beneficial. Gill (1985: 227), drawing on the analysis of the formation of agricultural cooperatives in three frontier communities of northern Santa Cruz Department, points out that "by promoting greater productivity and market integration through the diffusion of services to community residents, the organization attracted a small group of peasants who were expanding their agricultural operations through the use of wage laborers and allowed them to achieve considerable power at the local level." As regards the marketing of Brazil nuts, unification beyond the household boundaries is surely of advantage. As being practiced by certain extractive communities, the cooperative marketing bears the advantage of fetching higher prices provided that whole truck loads, or significant parts thereof, can be supplied.

NTFP development and overall development

Rural development in northern Bolivia and elsewhere suffers from inadequate patterns of public investment. In the late 1990s, for instance, municipal investments in the densely populated municipality of Riberalta were highly skewed toward the urban area (Kaimowitz and Bojanic 1998: 152). Likewise, investments born by the departmental governments in Beni and Pando have traditionally been directed to their capitals. Both the Popular Participation Program and the restructured forest royalty system are positive steps towards a new pattern of public spending, channeling government funds to the rural areas via the municipalities. The royalty system, for instance, directly links the payments transferred to a given municipality to the production potential of its forest lands.[671] Thus, both NTFPs and timber harvested from municipal lands contribute not only to household but also to municipal income, fostering

[671] According to Art. 38 of the Forest Act, the municipalities receive 25% of the royalties for NTFP and/or timber extraction as well as 25% of those to be paid for clearing permits (BOLFOR 1997: 37).

investments in health and education infrastructure even in remote areas that have long been bypassed by public spending.

We have seen that the level of formal education is a key determinant of income formation in peri-urban households. Though education has been assigned more value in Bolivia over the past years much remains to be done. According to data of the Viceministry of Primary and Secondary Education, only 13% of public school students in the Beni Department are enrolled in higher secondary education (*ciclo medio*), while the remainder attends primary and lower secondary education (*ciclo básico y intermedio*) (INE 1997a). In Pando Department, the situation is even worse, with only 9% of the students enjoying higher secondary education (INE 1997b). At national level, this share is 17% (INE 1997c), clearly demonstrating the relatively low value assigned to higher secondary schooling in the Departments of Pando and Beni. Similar to the educational sector, most progress in the health sector accrues to the urban population. Between 1992 and 1997, the number of persons having a health insurance in the Pando and Beni Departments increased by 54% and 62%, respectively (INE 1997d). However, the share of the population having such an insurance in either of these departments still does not exceed 20% according to the National Institute of Health Insurances (INASES) (ibid.).

In addition to the enhancement of educational and health facilities, the expansion of the road network is another prerequisite for both endogenous and exogenous development processes. It was stressed that road construction, its dubious reputation among environmentalists notwithstanding, has been a pivotal agent of change strengthening the *campesino* sector at the expense of the former rural elite embodied by the patrons.[672] As early as 1890, Ballivián saw the beef supplies for the rubber zone only secured through a comfortable and permanent (road or rail) link between northern Bolivia and the rest of the country (1890a: 32). Likewise, de Rivière foresaw that "a road to place Beni in communication with La Paz would consolidate industrial enterprise, agriculture and commerce, which are now almost impossible for wants of means of transportation for the people and their machines and tools" (1892: 207-8). Finally, Gúzman argued in 1905 that it is the lack of road connections rather than the lack of capital or access to credits that prevents Bolivian products in the Beni Department from being competitive with Brazilian produce (p. 11).[673] It took almost a century before northern Beni would receive the road unanimously plead for: it was not until 1991 that the La Paz-Riberalta highway – far from being an all-weather road due to lacking pavement and drainage – was completed. At the end of the 20th century, the situation seems to have hardly changed, as "road construction is one of the rural population's most widespread demands ..." (Kaimowitz *et al.* 1998: 57), and it sounds like an entreaty when they continue "... and local governments dedicate substantial attention to road issues."

Unlike other rain forest areas in Amazonia or elsewhere, road construction in northern Bolivia hardly paved the way for those invading unoccupied forest margins in search of land for slash-and-burn agriculture. But a dramatic change is anticipated with the completion of the transport corridor (*Corredor del Transporte del Noroeste*), aimed at connecting Brazil's northwest via Guayaramerín and Riberalta to La Paz and the Pacific coast. Though unlikely to

[672] The transformation from a captive labor force into an independent labor force in Acre is also attributed to the demographic expansion that ensued the arrival of the Brasilia-Acre highway towards the end of the 1960s (see Bakx 1988: 151).

[673] In the early 1900s, some authors were even more visionary, foreseeing that the regulation of the region's cataracts would require an investment of several millions (see von Vacano and Mattis 1906: 64). Up to the present day, however, not a single project has been sketched in this respect.

be completed before 2020, it might well turn into a "high impact corridor" (Sierra and Stallings 1998: 152) in terms of forest resource use. But for this ambitious road project to come true, a different attitude from policy makers elsewhere in Bolivia would be required. In fact, the invariable political neglect of northern Bolivia manifests in two prominent aspects. First, public expenditure is highly skewed toward the 'development axis' La Paz-Cochabamba-Santa Cruz. Second, northern Bolivia is traditionally underrepresented in decision making at national level.[674] The weakness of the regional elite within the national power structure can be attributed to the dominance of the highland elite in their historic rivalry with the lowland elite (Kaimowitz 1997: 539), which in turn is dominated by an elite mainly based in Santa Cruz Department. Whether to interpret this political neglect as the failure of the Bolivian state to recognize the strategic importance of the region (Fernández and Pacheco 1990: 13), or primarily as a consequence of the region's low population density, its limited economic power, and the existence of more challenging 'hot spots' of development in other parts of the country, may be up to the reader.[675]

Another factor hampering state-borne infusions of financial and infrastructural resources is the inconvenient politico-administrative division of northern Bolivia. Every now and then this topic appears on the agenda of a few scattered patriotic activists and opportunistic politicians. It is true that Riberalta has almost caught up with Trinidad – Beni's departmental capital – in terms of population and economic activity. Riberalta's status as provincial capital also appears obsolete because it has four times the population of Cobija, the capital of the Department of Pando. However, the creation of an Amazonian Department in northern Bolivia with Riberalta as its capital (see Quiroz 1996: 30), as appealing as it appears to Vaca Diez residents, has little chance to materialize. This endeavor would be opposed by the Departments of Beni and Pando, as neither Trinidad nor Cobija can be assumed to be willing to share their privileges with Vaca Diez and its principal town. Nonetheless, the 'magic' triangle between Riberalta, Guayaramerín, and Cachuela Esperanza already constitutes a dynamic economic space which can further contribute to the economic development of Vaca Diez and even Pando given the spin-offs of recent economic growth (cf. Quiroz 1996: 32).

NTFP development from the 'modern' and 'evolutionist' viewpoint

It is worthwhile here to come back to what I called the evolutionary and modern views of extractivism in Chapter 1. Both viewpoints have distinct strengths and weaknesses. The evolutionary view can be criticized for unwarrantedly putting *any* kind of extractivism on a level with natural resource use by hunter-gatherer societies. This view is wrong for several reasons. First, true foragers extract forest products predominantly, if not exclusively, to meet subsistence needs, whereas 'modern' extractive populations typically orient an important fraction of NTFP production to the market. Second, hunter-gatherer societies do not practice agriculture to any significant degree, while the latter plays a key role in 'modern' extraction-based livelihood systems, as shown for the case of northern Bolivia. Third, the nomadic nature of hunter-gatherers allows for the recovery of the resource base after phases of local overexploitation. In contrast, 'modern' extractivism typically implies sedentary lifestyles

[674] During the process of formulating the 1996 Forest Act, for example, regional representatives were bypassed, resulting, among other things, in the Law's limited coverage of non-timber forest use (Pavez and Bojanic 1998: 144).

[675] El Alto, for instance, the satellite city of La Paz, can conveniently be grouped under such 'hot spots' of development. Being home to around five times the population of northern Bolivia, its burgeoning growth because of rural-urban migration, its notorious unemployment or underemployment, and its extraordinarily high crime rate merit utmost attention of the nearby government in La Paz.

subject to competition for scarce natural resources, allowing sound management practices only when appropriate institutional arrangements are in force. Finally, traditions of natural resource use in hunter-gatherer societies are passed on from one generation to the next. In contrast, 'modern' extractors often lack ancestral practice of forest product extraction. This is, for instance, the case in northern Bolivia and Northwest Brazil, where they largely comprise both urban-rural migrants and immigrants from outside the extractive zone with various backgrounds other than extractivism.

On the other hand, the 'modern view' of extractivism suggests that commercial NTFP extraction is a rather recent phenomenon. This is clearly not the case, as countless accounts from all over the world suggest. There is ample evidence that local, regional and even supra-regional trade in NTFPs from tropical forests dates back to the early days of their human occupation (cf. Padoch and Vayda 1983: 310-1). It is therefore a myth that hunter-gatherer societies lived in isolation from their closer and larger surroundings. Moreover, it is suggested that the continuum of resource use from the definitely gathered to the definitely cultivated impedes the strict dichotomy between hunter-gatherers on the one hand and shifting cultivators on the other (Padoch and Vayda 1983: 305).[676] Similarly, there is a continuum from older hunter-gatherer-like forms of forest product extraction to more recent manifestations characterized by higher degrees of industrialization, market integration, incorporation of agriculture, and management options. This continuum defies the dichotomy between 'evolutionary' and 'modern' extractivism or, as Padoch and Vayda (1983: 301) put it, "the division ... into hunting-gathering, shifting cultivation, and permanent field-cropping is ... often erroneously assumed to be a necessary evolutionary sequence". Yet, the two divergent views of extractivism continue to shape the opinion on the desirability of incorporating NTFPs into the 'modern' management of tropical forests.

The point at stake is redefining the priorities between conservation and development rather than quibbling on the 'true' nature of extractivism, be it 'modern' or 'evolutionary'. Ultimately, such priorities should be set by those who are immediately affected, that is both 'traditional' and actual forest dwellers. While people alien to a respective setting, in particular extra-regional NGOs, are likely to give priority to conservation aspects, the population of extractive areas can be expected to opt for economic development.[677] As long as we do not listen to the voices of the forest floor, we end up with nice-sounding but politically meaningless propositions as the following: "NTFP-collecting activities appear to be compatible with conservation only under a very narrow range of ecological and economic conditions, and can

[676] Even very recent studies on agroforestry systems in the Amazon fail to acknowledge this continuum that often exists not only between but within given households. Pasquis (1998), for example, distinguishes three such systems, viz. extractivism, shifting cultivation and more sedentary agroforestry systems. Rather than classifying them as strategies within more complex livelihood systems, it is erroneously assumed that these are distinct livelihood systems.

[677] A study conducted in the Juruá Extractive Reserve revealed that "there is no local consensus ... that, if there is increased income from local economic advancement, it would be best reinvested in small-scale extraction and environmental conservation rather than in agriculture, livestock production, improvement of access, or even migration to cities" (Whitesell 1996: 428). That the international NGOs involved in the quest for extractive reserves tended to favor conservation aspects, while the rubber tappers movement strove primarily for economic and social development is also documented by Keck (1995). Similar experiences were made in projects pursuing a sustainable livelihoods approach: '"people-focused' projects emphasise the environmental perspectives of poor people, which may vary significantly from donor perspectives of the environment" (Ashley and Carney 1999: 34). "Even in those cases where indigenous peoples overtly profess a concern for conserving biodiversity for political, economic, religious, aesthetic, or moral reasons, they almost certainly do not ascribe the same meaning to this term as do biologists" (Redford and Stearman 1993: 252).

safely be promoted as being compatible with conservation only when supported by careful land-use planning, programmes to manage agriculture and livestock production, and resource management regulations with wide local support" (Crook and Clapp 1998: 136). How to obtain 'wide local support' when such premises are based on poor knowledge of the true dimension of local livelihood strategies which are partly based on temporarily and spatially limited overexploitation of forest resources remains open.

Such partial overexploitation could also be viewed from a different ecological angle. In fact, rain forest ecology has long been dominated by a somewhat romanticized view of ecological equilibrium. Over the past years, however, we have been gaining increasing insight on the crucial role catastrophic events such as droughts, floods, hurricanes, volcanic eruptions etc. play in the ecology of tropical rain forests. A good part of Latin American and African rain forests had been reduced to savannas and grasslands during the Pleistocene (e.g., Whitmore and Prance 1987, Martin 1989, Ledru 1992). Furthermore, it is "choice and opportunity" rather than clear-cut patterns that have a bearing on species composition and distribution (Whitmore 1985, *passim*). The lesson learned is that we have to acknowledge the invariably impermanent nature of tropical forests and to strive for a better understanding of the underlying factors of the dynamics at play. As to rain forest economy, the majority of external stakeholders from both academic and NGO background seem to be still caught in the phase of an 'equilibrium view', assuming or hoping for a – however loosely defined – equilibrium between rain forest users and their natural environment.

There is increasing knowledge on how indigenous groups and other 'traditional' rain forest users have deliberately manipulated and controlled the rain forest environment according to their needs since millennia (see e.g., Alcorn 1981, D'Ans 1982, Posey and Balée 1989).[678] This, however, still needs to translate into policies that permit the actual users a dynamic interaction with the natural assets they base their livelihoods on. The paradigm of conservation *and* development may best reflect this somewhat romanticized and idealized view of forest-people interactions. Apart from the fact that this view is only shared by outsiders to the forest, that is people who do not depend directly on its resources, it is at best paternalistic to assume that forest dwellers would always and under all circumstances manage tropical forest resources in a sustainable fashion would they only be given fair access to land, credits, and markets. Approaches to base the livelihoods of inhabitants of extractive reserves solely on the extraction of NTFPs do not fail primarily because of insecure land tenure, insufficient GO and NGO support, or lacking access to markets, but because of their restricted economic basis. Evidently, 'conservation *and* development' is no master principle that works at any given place or time. What is needed is a more dynamic concept of rain forest use, allowing for 'chances and opportunities' offered by the market – including that of timber and agricultural produce – as well as varying priorities of individual and community-based forest resource management at different points in time.

Only a relatively small minority in the industrialized world is truly concerned with the unsustainable use of fossil energy *and* renewable natural resources in the northern hemisphere. Though rarely explicitly mentioned, it seems to be trusted in the adaptive nature of humankind to find solutions to a crisis once it is undeniable and felt by a majority. On the other hand, forest dwellers and urban-based forest users in the South are largely expected not to follow the pattern of resource depletion as practiced in the North, but to preserve the

[678] Roosevelt (1999: 373) points to the importance of the long-term human occupation of Amazonia: "Since the late Pleistocene, forest ecology has been part of human ecology, and forest history, part of human history."

natural heritage for future generations. What if the same patterns of at times more exploitative at times more preservative resource use would be conceded to the countries covered by still extensive tracts of tropical forests? Could it be that 'chance and opportunity' are the major principles governing not only ecology but the economy of tropical rain forests? The characteristic boom and bust cycles of NTFP markets would then be viewed from a different perspective. As long as there is a market opportunity, NTFPs would supposedly be gathered in a catch-as-catch-can fashion[679] and, more importantly, this mode of extraction would occur largely independent from government policies, land tenure, prices, and benefit sharing in the related industries.

Overexploitation of the resource base depends on a given species' autecology, the harvesting regime, and accessibility to forest stands. When we admit the principle of 'chance and opportunity' in tropical rain forest use, we need to abandon our static picture of a forest-people equilibrium. Instead, cycles of deforestation and reforestation, or of forest resource depletion and recovery, would be understood as the rule rather than the exception.[680] The fragile ecology of tropical rain forests, however, prohibits the disturbance through extensive resource mining and large-scale conversion to non-forest land uses.[681] As long as we accept this bottom line, we may become somewhat more relaxed about the overexploitation of a rare orchid, the commercial extinction of a tropical palm, or the temporarily reduced abundance of a timber species. However, this does not mean that from a livelihoods perspective these events were not of concern. Doubtlessly, local forest users should receive support from both the governmental and non-governmental sector in diversifying their agro-extractive portfolio, in techniques of domestication and cultivation, in organizational and institutional issues, and as regards access to secure land tenure, markets, and credit.

Final conclusion

The international discussion about the fate of the tropical forests over the past decade and a half has been an indispensable and, to varying degrees, successful platform in the process of providing the basis for their continued preservation and utilization. However, despite the lipservice paid to the crucial importance of forest-dependent people in defining the measures to overcome tropical deforestation, little has been achieved to incorporate their voices in concrete local development efforts, let alone national and international policies. As long as 'outsiders' – including nationals alien to a given local setting (see Section 1.3.4.1) – do not adequately understand, let alone take serious, the livelihood strategies of the forest dwellers *and* the economic-political strategies of other stakeholders in the tropical forest quest – loggers, cattle ranchers, miners, politicians, line agencies, NGOs, banks, and the like – we are far from being able to contribute our part to practical solutions. In this context, the scientific community has little role to play as long as its primary concern is any perceived or real loss of biodiversity. In fact, "the struggle for the preservation of sociodiversity is at least two decades behind that of biodiversity" (Neves 1995: 117).

[679] For example, it is reported from the Beni Department that tribal and peasant Indians – in spite of a legislation that supposedly favored them – "responded in catch-as-catch-can fashion to an advancing White frontier" (Jones 1985: 31).

[680] The optimal intertemporal use of forests, *i.e.* , clearing followed by reforestation and then again clearing and so on, may be an optimal, yet transient policy, that will be followed by reforestation (Wirl 1999).

[681] Obviously, sound land use policies would help distinguish rainforest zones that are apt for conversion to non-forest land uses. These policies would also have to determine the 'optimal rate of deforestation' (cf. Farley 1999).

This study sought to shed some light on the hardship faced by tropical forest dwellers in the northern Bolivian Amazon – a region still largely exempted from major deforestation – and their impressive adaptive capabilities in view of the vagaries of international forest product markets and the repercussions of political neglect. It is hoped that this – unmistakably still superficial – view on forest-dependent rural and peri-urban livelihoods and the considerable variety involved may serve as a modest contribution to make their case more public. The outcome of the study pleads for the due acknowledgement not only of the biological diversity inherent in tropical forests but also the intrinsic sociodiversity they have given rise to. May this diversity be recognized as much a 'heritage of mankind' as fine pieces of art, architecture, or archaeological and tropical forest sites (see UNESCO 1997, CIFOR *et al.* 1999). This, however, not in the sense of being incorporated into the World Heritage Convention but as a universal reminder of our collective past and our common responsibility for the future.

8

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Editorial note:

All translations were done by the author unless otherwise noted. With the exception of direct quotations which may be in British English, spelling follows the American system for which Microsoft's spell check 'English (USA)' and 'Langenscheidts Handwörterbuch Englisch' (Brough 1996, Messinger 1996) were used as a reference. Style follows largely CIFOR's internal style guide. Conversion of local currencies (*peso* or *boliviano*) into Pound Sterling or US dollar is subject to inaccuracy because of short-term inflationary effects, in particular in the late 19th and early 20th centuries. Consequently, the currency equivalents stated in the text should rather be read as approximations that reflect general currency trends. To adjust for inflation, former values in US dollar and those of today were compared by using Friedmann's Inflation Calculator.[682] Some notes on the Bolivian currency: throughout her history Bolivia has suffered from several monetary crises. As a result, the currency switched from *pesos* to *bolivianos* back and forth. The latest currency reform dates back to August 1985 when Bolivia's hyperinflation found its official end by replacing *pesos* ($b) with *bolivianos* (Bs.). Whenever $b is assigned to a monetary value it refers to *pesos* irrespective of the epoch, while Bs. stands consistently for *bolivianos*.

[682] The Inflation Calculator allows the comparison of the values of the US dollar between 1800 and 1999. The pre-1975 data are the Consumer Price Index statistics from Historical Statistics of the United States (USGPO, 1975, cited in Friedmann 2000). All data since then are from the annual Statistical Abstracts of the United States (ibid.).

9

ANNEXES

Annex 1 Tasks of the National Land Reform Institute (INRA)

The novel Land Reform Law known as *Ley INRA* (*Ley № 1715*) was passed on 18 October 1996. According to Art. 18 of the bill, the newly created National Land Reform Institute (INRA) shall have the following functions and responsibilities (BOLFOR 1997: 154-5):

to direct, coordinate and execute policies, plans, and programs of distribution, newly assigning (*reagrupamiento*), and re-distribution of land, whereby peasant and indigenous communities or people without (sufficient) land should be favored

giving priority to indigenous, peasant and other genuine peoples and communities, according to the major land use capacity

to propose, direct, coordinate and execute policies and programs for the settlement of the national population

to release and distribute land titles, on behalf of the highest authority of the SNRA, on state land including the areas which are expropriated or revert to the state

to release technical guidelines for the legal execution of the rural land register and to coordinate its execution

to regulate location and size of the state lands still available, the original common property lands (*tierras comunitarias de origen*), the estates distributed within the framework of the Land Reform and the private agricultural property in general

to expropriate estates, officially because of the purpose to regrouping and redistribute, or, on denunciation of the Agrarian Superintendence, when the socio-economic function as established by the law has not been fulfilled

to revert land officially or on denunciation of the tax collecting or tax benefiting entities, the departmental agrarian commissions, and the National Agrarian Commission, when abandoned as established by this law

to identify and grant the areas and surfaces for the distribution and re-distribution of land, according to the major land use capacity and the socio-economic necessities of the country

to promote the resolution of conflicts emerging from the land possession and the right of agricultural property

managing and updating the register of distributed land, its beneficiaries and the availability of public land

coordination with other public and private agencies in charge of supplying infrastructure, basic services and technical assistance in the settlement areas

to certify existing rights on state land designated for conservation, research, ecotourism, and forest utilization

Annex 2 Agro-extractive calendar in the northern Bolivian Amazon.

	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Forest products												
Brazil nuts (since 1920s)						E	E	E	E			
Rubber (until 1995)			E	E	E					E	E	E
Palm hearts (since 1992)	E	E	E	E	E					E	E	E
Timber (since about 1985)	(E)	(E)	(E)	(E)	(E)					(E)	(E)	(E)
Fuelwood	E	E	E	E	E	E	E	E	E	E	E	E
Fish and game	E	E	E	E	E	E	E	E	E	E	E	E
Agricultural crops												
Rice / Maize	SL/B	SL/B	SL/B	S	S	S		H	H	H		
Manioc	H	H	H	S, H	S, H	H	H	H	H	S, H	S, H	H
Plantain	H	H	H	S, H	S, H	H	H	H	H	H	H	H
Rainfall (mm)	20	22	65	149	196	272	282	259	248	164	76	27

Source: Own elaboration

Note: E = Extraction; SL/B = Slash-and-Burn; H = Harvest; S = Sowing.

Annex 3 Salient features of the four neighborhoods investigated in Riberalta, northern Bolivia

	Los Almendros	Villa Don Carlos	1ro de Diciembre	San Juan
Foundation date	8 March 1982	7 March 1990	1 December 1993	24 June 1996
Blocks (#)	28	12	8	5
Lots (#)	156	116	194	≈ 70
Potable water (# lots)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Electricity (# lots)	124 (79%)	60 (52%)	0 (0%)	0 (0%)
Mean size of a lot	724 m²	401 m²	288 m²	625 m²
Mean price of a lot	5 US$/m²	2 US$/m²	3 US$/m²	0.4 US$/m²
Families (#)	211	162	252	83
Persons (#)	1218	826	1339	448
Persons/fam. (#)	5.8	5.1	5.3	5.4
Health post	projected for 2001	constructed in 1995	nil	nil
Schooling	1 secondary school, 1 polytechnic	nil	1 secondary school	nil
Processing plants	Urkupiña, Mavari	nil	nil	nil

Source: Unpublished census data of HAM Riberalta (1999) and own data based on interviews with FEJUVE members.

Annex 4 Zusammenfassung

Die vorliegende Arbeit entstand im Rahmen der Forschungszusammenarbeit zwischen dem Center of International Forestry Research (CIFOR), dem Institut für Forstpolitik, Arbeitsbereich Markt und Marketing, der Universität Freiburg, und mehreren Partnerorganisationen im nordbolivianischen Amazonasgebiet.

Die Untersuchung basiert auf einer räumlich differenzierenden, intertemporären, mikro- und mesoökonomischen Analyse von Extraktionswirtschaften im nordbolivianischen Amazonasgebiet. Sie beinhaltet die erstmalige Vorgehensweise, sowohl ländliche als auch peri-urbane Lebensunterhaltsstrategien in ihrer Anhängigkeit von der kommerziellen Nutzung von Nicht-Holz-Waldprodukten (NHWP) gemeinsam zu untersuchen. Ziel der Arbeit ist es 1) die zeitliche und räumliche Variabilität im Hinblick auf die Einkommensschaffung durch das Sammeln, Verarbeiten und Vermarkten von Paranüssen, Palmherzen und anderen NHWP zu durchleuchten, 2) zu einem besseren Verständnis von Stadt-Land-Verflechtungen beizutragen, die regionalen Mustern der NHWP-Nutzung und des -Handels zugrunde liegen; 3) eine differenzierte Betrachtungsweise von Lebensunterhaltssystemen, die auf NHWP basieren, weiterzuentwickeln vor dem Hintergrund ungleichen Zugangs zu natürlichen Ressourcen, instabiler Märkte, und unzureichender Förderung von Seiten der Regierungsbehörden oder Nicht-Regierungsorganisationen.

Die methodische Vorgehensweise umfasst fünf Phasen der Datenerhebung: 1) Untersuchung ländlicher Siedlungen: 163 von insgesamt ca. 700 Waldsiedlungen wurden systematisch im gesamten nordbolivianischen Amazonasgebiet untersucht; 2) Untersuchung ländlicher Haushalte: 151 zufällig ausgewählte Haushaltungen wurden in 27 Waldsiedlungen erforscht, deren Auswahl anhand einer auf der ersten Phase basierenden Stratifizierung vorgenommen wurde; 3) Untersuchung peripherer Stadtviertel, im Rahmen derer vier der insgesamt 16 Viertel einer Vorprüfung unterzogen wurden; 4) Untersuchung peri-urbaner Haushalte: 120 zufällig ausgewählte Haushalte wurden in den vier zuvor untersuchten Stadtvierteln befragt; 5) Historische Studie: Analyse von historischen Dokumenten im Nationalarchiv von Sucre und andernorts.

Die Dissertation ist in folgende Teile gegliedert: das Einleitungskapitel beinhaltet die Problemstellung, die generelle wissenschaftstheoretische Grundlage, sowie eine Einführung ins Untersuchungsgebiet. Es folgen vier thematische Kapitel, die jeweils einen Methodenteil enthalten sowie auf einen eigenen theoretisch-analytischen Bezugsrahmen verweisen. Das sechste Kapitel ist als Synthesekapitel gehalten, dem sich die Schlussfolgerungen aus den Ergebnissen für eine NHWP-gestützte Entwicklung anschließen.

Kapitel 1 weist in der Problemstellung auf die Bedeutung zweier unterschiedlicher Sichtweisen in Bezug auf die Extraktionswirtschaft hin, nämlich eine 'evolutionäre' und eine 'moderne'. Während jene die Sammelwirtschaft als ein primitives Stadium der Menschheitsentwicklung betrachtet, das im Verschwinden begriffen ist, betont diese das ihr innewohnende Entwicklungspotenzial in Bezug auf die Schaffung von Einkommen und Arbeitsplätzen, sowie den Erhalt der biologischen Vielfalt. Defizite heutiger NHWP-Forschung werden aufgezeigt; diese liegen im Mangel einer "livelihoods perspective", der unzureichenden Berücksichtigung räumlicher und zeitlicher Variabilität bezüglich des Sammelns von Waldprodukten, sowie der damit verbundenen Verknüpfungen zwischen dem städtischen und ländlichen Raum. Hinsichtlich der generellen wissenschaftstheoretischen Verortung gründet

die Arbeit auf einem naturalistisch/konstruktivistischen Ansatz und erkennt somit die Existenz vielfacher "Welten" an sowie die Tatsache, dass diese "gemacht" sind.

Kapitel 2 macht den Leser mit dem historischen Hintergrund vertraut, um ein besseres Verständnis der Entwicklungstendenzen in Extraktionswirtschaften zu ermöglichen. Es geht von einer kritischen Neubewertung des Kautschukbooms im Amazonasgebiet basierend auf neuen mikroökonomischen Erkenntnissen aus. Neben der Kautschukwirtschaft, die in Nordbolivien über ein Jahrhundert vorherrschte, werden die Auf- und Abschwungphasen bei der Ausbeutung von Chinarinde, Paranüssen, und weiteren NHWP behandelt. Es wird gezeigt, dass die Extraktionswirtschaft, die sich Anfang des 19. Jahrhunderts bei der Ausbeutung von Chinarinde unter merkantilistischen Bedingungen entwickelt hatte, sich in der Stufe des 'primitiven Kapitalismus' während der Kautschukära von 1860 bis Mitte der Achtziger Jahre des 20. Jahrhunderts fortsetzte. Erst im Zuge des kürzlich erfolgten Zusammenbruchs der Kautschukwirtschaft bildete sich mit dem gleichzeitigen Aufschwung der Paranuss-, Palmherzen- und Holzindustrie eine vollkapitalistische Wirtschaftsweise heraus. Dementsprechend veränderten sich Arbeitsorganisation, Abhängigkeitsverhältnisse und das Grundprinzip eines Kreditsystems, welches die gegenseitige Abhängigkeit zwischen den Sammlern und verschiedenartigen Mittelsmännern begründete.

Kapitel 3 konzentriert sich auf jüngere Entwicklungen in der Nach-Kautschukära and stellt sie in einen Zusammenhang mit den zuvor erarbeiteten langfristigen Entwicklungstendenzen. Ein Modell vom historischen Zyklus der amazonischen Extraktionswirtschaft dient der Analyse des Wechsels zwischen verschiedenen Sammeltätigkeiten. Das Auf und Ab in der nordbolivianischen Sammelwirtschaft bestätigt grundsätzlich die Voraussagen des Modells. Es wird dargelegt, dass trotz der Eignung des Modells, die Zyklen individueller NHWP vorherzusagen, es nicht der Dynamik bei der Vielfalt der Produkte Rechnung trägt, von der die Sammler üblicherweise abhängen. Da die Zyklen einzelner Sammelwirtschaften nur selten synchron verlaufen, steht stets ein bestimmtes NHWP-Portfolio zur Verfügung, auf das sich Lebensunterhaltsstrategien gründen können. Es wird überdies gezeigt, dass im Gegensatz zur vorherrschenden Meinung in der Literatur die jüngsten "Booms" in der Paranuss- und Palmherzen-Industrie nicht nur den Fabrikbesitzern und Zwischenhändlern zugute kommen, sondern auch den Fabrikarbeitern und Sammlern.

Kapitel 4 gründet sich auf die Theorie der "frontier urbanization" um die der Differenzierung von Waldsiedlungen zugrundeliegenden Faktoren zu analysieren sowie die Rolle, die dabei sowohl Landflucht als auch Migrationsbewegungen, die auf den ländlichen Raum beschränkt bleiben, spielen. Eine Siedlungstypologie wird vorgestellt, die die Vielfalt von Siedlungstypen sowohl unter den großen Landgütern als auch in den unabhängigen Dorfgemeinschaften von bäuerlichen Kleinproduzenten widerspiegelt. Im Gegensatz zur Theorie wurden diese nicht von den großen Landgütern verdrängt. Vielmehr konnten sie ihren Anteil an der Paranuss-Produktion – dem heutigen wirtschaftlichen Rückgrat der Region – auf Kosten der Großgrundbesitzer steigern, indem sie die von ihnen kontrollierte Fläche ins Gebiet jener erweiterten. In diesem Prozess spielte Straßenbau eine essentielle Rolle. Es wird gezeigt, dass der Ausgleich zwischen Landwirtschaft, Sammeltätigkeiten und Lohnarbeit eine Funktion des Raumes ist. In entfernt gelegenen Siedlungen bildet die Sammelwirtschaft den Mittelpunkt wirtschaftlicher Aktivitäten, während in stadtnäheren Siedlungen ein größerer Anteil der landwirtschaftlichen Produktion vermarktet wird. Die jüngste Abwanderung von großen Landgütern hin zu unabhängigen Dorfgemeinschaften oder in städtische Zentren wurzelt vor allem im Mangel an Grundversorgungseinrichtungen und Dienstleistungen in abgelegenen Pioniergebieten ('frontier areas'). Es wird vorgeschlagen, die 'frontier theory'

dahingehend weiterzuentwickeln, dass sie zyklische Erweiterungs- und Rückzugsphasen berücksichtigt, anstatt einen linearen Entwicklungsprozess von der "Öffnung" eines Pioniergebietes hin zu seiner "Schließung" zu implizieren.

Kapitel 5 stellt peri-urbane Haushaltungen, die von NHWP abhängig sind, und deren Migrationsmuster in den Mittelpunkt. Der theoretische Rahmen wird von allgemeinen Migrations- und Verstädterungstheorien, sowie den Konzepten eines Stadt-Land-Kontinuums und von peri-urbanen Lebensunterhaltsstrategien gebildet. Eine diesbezügliche Typologie wird vorgestellt, die zwei ausschließlich im städtischen Umfeld angesiedelte Lebensunterhaltsstrategien von zwei Strategien unterscheidet, die in unterschiedlichem Ausmaß in ländlichen Aktivitäten wurzeln. Letztere setzen saisonale Migration in den ländlichen Raum voraus, insbesondere um sammelwirtschaftlichen Tätigkeiten nachzugehen. Die besondere Bedeutung von Stadt-Land-Verflechtungen wird untermauert durch das beträchtliche Einkommen, das durch das Sammeln, die Verarbeitung und die Vermarktung von NHWP erzielt wird. Es wird gezeigt, dass NHWP-Einkommen indirekt proportional zum Bildungsniveau der Haushaltsvorstände sind, während Einkommen aus anderen Quellen direkt proportional dazu sind. Dennoch stellen NHWP keine letzte Zuflucht für die ärmsten Bevölkerungsschichten dar angesichts der Tatsache, dass diejenigen, die von ihnen abhängig sind, üblicherweise der mittleren Einkommensgruppe zuzurechnen sind. Die Analyse von Migrationsmustern zeigt die Komplexität von Land-Stadt-, Stadt-Stadt- und zyklischen Wanderungsbewegungen und unterstreicht die Bedeutung von Migration als bewusste Strategie im Rahmen von peri-urbanen Lebensunterhaltssystemen.

Kapitel 6 strebt die Synthese der wichtigsten Ergebnisse der vorangegangenen Kapitel mit Blick auf Stadt-Land-Verbindungen und die Gewinnverteilung in der NHWP-Wirtschaft Nordboliviens sowie deren Entwicklungsfähigkeit an. Es hebt die grundsätzliche Wahlmöglichkeit der ländlichen Bevölkerung hervor zwischen einer Siedlung in Stadtnähe mit guter Erreichbarkeit von städtischen Dienstleistungen aber geringem Zugang zu landwirtschaftlicher Produktionsfläche bzw. Waldfläche zur Ausübung von Sammeltätigkeiten, und einem Leben in abgelegeneren Teilen der Region, die sehr gut mit natürlichen Ressourcen aber kaum mit grundlegender Infrastruktur und Dienstleistungen ausgestattet sind. Diejenigen, die sich für ein Leben im Stadtrandbereich entschieden haben, haben gute Zugangsmöglichkeiten zu den genannten Diensten, aber entbehren der landwirtschaftlichen Grundlage zur Sicherung ihres Grundbedarfes. Die zunehmende Konzentration von Waldflächen im Besitz von Stadtbewohnern stellt einen Prozess dar, der sowohl Chancen wie Risiken in Bezug auf die Gewinnverteilung in der NHWP-Wirtschaft birgt. Lebensunterhaltsstrategien, die sich auf NHWP gründen, werden als tragfähige Option sowohl für die ländliche als auch die peri-urbane Bevölkerung angesehen, auch wenn sie eher dazu beitragen, den Status Quo zu erhalten, als umfassende sozio-ökonomische Entwicklung zu fördern.

Kapitel 7 enthält die Schlussfolgerungen für Regionalentwicklung, insbesondere aber für NHWP-gestützte Entwicklung. Diese dokumentiert einen endogenen Entwicklungsprozess angesichts der Tatsache, dass sich bislang weder die öffentliche Hand noch Nicht-Regierungsorganisation wesentlich in der Förderung der NHWP-Wirtschaft hervortaten. Zieht man die generelle politische Vernachlässigung der Region in Betracht, ist davon auszugehen, dass weiterhin die Privatwirtschaft die treibende Kraft im regionalen Entwicklungsprozess sein wird, heutzutage an erster Stelle die Paranuss-Industrie, in Zukunft aber auch die Holzindustrie. Da ein Großteil der regionalen Forstprodukte auf internationalen Märkten gehandelt wird, die starken Fluktuationen unterliegen, kann allerdings der private Sektor nur

bedingt Einfluss nehmen auf die Gestaltung der Handelsbedingungen. Sowohl die NHWP-Wirtschaft als auch die ländlichen und peri-urbanen Haushaltungen, die von ihr abhängen, werden kontinuierlich ihre Fähigkeit zur Anpassung an Auf- und Abschwungphasen in der Extraktionswirtschaft unter Beweis stellen müssen.

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Doing research at the end of the 20th century in a remote pocket of the upper Amazon is nothing comparable to the adventures and challenges that explorers like La Condamine, Orellana, von Humboldt or, in northern Bolivia, Palacios, Maldonado, Heath, and Nicolás Suárez faced and braved. Contemporary researchers are flown in to Riberalta from where they reach to the forest-based villages or hamlets by four-wheel drive or, in case of lacking road access, a light boat equipped with an outboard motor – provided there is no shortage of fuel. Though still being exposed to the vagaries of the weather and most probably the same myriads of mosquitoes that had to be endured during previous centuries, the researcher's travel in the Amazon is fairly comfortable today. Yet a Ph.D. dissertation in Amazonia is still an adventure in that it involves a wide variety of persons without whom such an endeavor could never be accomplished. This is where the acknowledgement starts.

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