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RURAL NON-FARM INCOME IN DEVELOPING COUNTRIES

By Tom Reardon

INTRODUCTION

The traditional image of farm households in developing countries has been that they focus almost exclusively on farming and undertake little rural non-farm (RNF) activity.¹ This image persists and is widespread even today. Policy debate still tends to equate farm income with rural incomes, and rural/urban relations with farm/non-farm relations. Industry Ministries have thus focused on urban industry and Ministries of Agriculture on farming, and there has been a tendency even among agriculturists and those interested in rural development to neglect the RNF sector.

Nevertheless, there is mounting evidence that RNF income (i.e. income derived in this sector from wage-paying activities and self-employment in commerce, manufacturing and other services) is an important resource for farm and other rural households, including the landless poor as well as rural town residents. Although this source accounts for only part of total off-farm income (which also includes farm wages and migration earnings), this chapter focuses on RNF income so as to enable a closer examination of what can be done within rural areas themselves to increase overall economic activity and employment.

There are several reasons why the promotion of RNF activity can be of great interest to developing country policy-makers. First, the evidence shows that RNF income is an important factor in household economies and therefore also in food security, since it allows greater access to food. This source of income may also prevent rapid or excessive urbanization as well as natural resource degradation through overexploitation.

Second, in the face of credit constraints, RNF activity affects the performance of agriculture by providing farmers with cash to invest in productivity-enhancing inputs. Furthermore, development of RNF activity in the food system (including agroprocessing, distribution and the provision of farm inputs) may increase the profitability of farming by increasing the availability of inputs and improving access to market outlets. In turn, better performance of the food system increases rural incomes and lowers urban food prices.

Third, the nature and performance of agriculture, themselves affected by agricultural policies, can have important effects on the dynamism of the RNF sector to the extent that the latter is linked to agriculture. This sector grows fastest and most equitably where agriculture is dynamic – where farm output is available for processing and distribution, where there are inputs to be sold and equipment repaired and where farm cash incomes are spent on local goods and services.

In the light of these factors, the present review pursues two main purposes: it seeks to sensitize governments, donors and development agencies to the issue of RNF activity and its importance for agricultural and rural development as well as poverty alleviation; and, with a view to furthering the harmonious growth of both the farm and RNF sectors, it cites broad implications that RNF activity may have for agricultural policy and for policy and institutional coordination. The questions addressed are as follows:

- What are the patterns of RNF income and employment in the different developing country regions? How important is RNF activity, how fast is it growing and what is its nature by region and type of agro-ecological zone?
- What determines patterns of RNF income and employment; in particular, what is the role of agriculture and how is it affected in turn? Also, what is the determining role of rural household characteristics (e.g. education, asset ownership) and how are they affected by those patterns?
- What effects do RNF income and employment have on the levels and distribution of rural household incomes, poverty incidence and food security?
- What policy and programme implications can be drawn from these points?

Serving as background for the rest of this special chapter, the review begins with a conceptual discussion of factors influencing the decision by households to participate in RNF activities and the nature and types of relations and linkages between the farm and non-farm sectors in a rural economy.

REASONS FOR HOUSEHOLD PARTICIPATION IN RNF ACTIVITIES

Decisions made by rural households concerning the form and extent of their involvement in RNF activities (either starting enterprises or entering the wage labour market) generally depend on two main factors:

- the incentives offered, such as the relative profitability and risk of farm and RNF activities;
- the household's capacity (determined by education, income and assets and access to credit, etc.) to undertake such activities.

Households are motivated to undertake RNF activity by either "pull" or "push" factors.

In the case of enterprises set up by households, the choice of technologies and products will likewise be determined by similar conditions. When opting to undertake RNF activities, farm households² may be motivated by:

- "pull" factors, such as better returns in the non-farm sector relative to the farm sector; and

- "push" factors,³ which include in particular:
 - an inadequate farm output, resulting either from temporary events (e.g. a drought) or longer-term problems (e.g. land constraints);
 - an absence of or incomplete crop insurance and consumption credit markets (to use as ex post measures for harvest shortfalls);
 - the risks of farming, which induce households to manage income and consumption uncertainties by diversifying and undertaking activities with returns that have a low or negative correlation with those of farming;
 - an absence or failure of farm input markets or input credit markets, compelling households to pay for farm inputs with their own cash resources.

Factors conditioning incentives and capacity for RNF activities

Incentives and capacity for undertaking non-farm activities may diverge. Thus, poor farmers may very well have strong incentives to participate in RNF activities while lacking the capacity to do so because of various constraints.

Household wealth and agroclimatic zone.⁴ Incentives to participate in RNF activities differ according to households' wealth. Poorer households are less able to tolerate or cope with negative shocks to their income and are thus more averse to this type of risk. They are therefore more likely to diversify in favour of less risky income sources and activities.

Moreover, the agroclimatic characteristics of the zone (favourable or unfavourable, more or less variable) will influence farm households' risk motive for income diversification into non-farm activities. Households in zones with a high-risk agriculture would be more "pushed" to diversify into RNF activities. A larger share of such activity would be undertaken merely to cope (ex post) with shocks to farm income (such as from drought), although one would expect diversification of income also in "normal" years (e.g. non-drought years) so as to accumulate resources (wealth) with which to overcome negative shocks. By contrast, households in zones where agriculture is less risky might participate in RNF activities mainly for the higher returns they give or in order to alleviate cash and credit constraints.

Even if the incentives to diversify (for push or pull reasons) are high, whether the household will react to these incentives depends on its capacity to do so. In the absence of well-functioning credit and insurance markets (which is frequent, if not the rule, in rural areas of developing countries), the capacity to invest in a diversified set of activities increases with household wealth. If diversification is costly (i.e. if an activity has high entry barriers – a fact that empirical evidence tends to support) and initially risky, wealthy households are in a more favourable position to diversify into RNF activities since they can use their wealth for self-financing and as a buffer against negative income shocks.

Where households are in the presence of risk are free from credit constraints, it would be reasonable to expect them to diversify less as their wealth increases (because the risk aversion motive for diversification declines as wealth increases). Instead, activities would be more concentrated on (expected) high-profit areas. In this case, poorer households would diversify

more. In the presence of liquidity and credit constraints to diversification by the poor, an opposite outcome may occur: the poor may want to diversify for risk reasons but cannot do so because of liquidity constraints, while wealthier households have less of a risk incentive to diversify but are in a better position to self-finance this diversification. Thus, more diversification is observed among the non-poor than among the poor.

Profitability of rural non-farm activities. A number of exogenous factors affect the profitability and risk of farm and rural non-farm activities and thus the mix of the two types of activity undertaken by a household. The profitability of a given RNF activity is determined by the price of the product produced or the wage received in the sector and by the prices of the array of inputs used in the production process or employment.

In general, both product and input prices for RNF activities will be influenced by the transmission of effects of macroeconomic and sectoral policies such as devaluation of the currency, changes in the interest rate and changes in tariffs on imported final and capital goods as well as by factors influencing transport and other transaction costs. Such factors also include the condition of soft infrastructure (e.g. extension, market information and education) and hard infrastructure (e.g. roads and telephone lines). In response to these conditions, private firms can lower transaction costs through contracts and other coordination mechanisms so as to increase interaction among businesses across sectors or subsectors and thus strengthen intersectoral and intrasectoral linkages.

The capacity of local factor markets to provide appropriate productive inputs and financial capital for RNF activities will influence the prevailing input prices. For example, if the local labour market has an insufficient number of skilled workers, the skilled wage rate to be paid by RNF entrepreneurs will be driven up. If the real estate market in a rural town is constrained by building regulations, purchase prices and rental rates for workshop space may also be forced upwards.

Development policies and programmes. Development projects deserve a special mention: as an instrument of development policy, these projects constitute an important set of determinants of incentives and capacity for rural households to participate in RNF activities. In a sense, a development project is a mini-package of public policies and investments that apply to a restricted set of activities in space and time and affect a limited number of participants. A typical example from the RNF sector would be a dairy project, coordinated by an NGO or the government and involving the provision of trainers and equipment to develop a small-scale dairy activity with a selected set of rural households. An immediate aim would be to facilitate milk marketing with project vehicles and donor expertise. This form of support in fact constitutes a (bounded) subsidy policy for inputs (equipment, training services and market facilities) targeted at a given RNF subsector, group of actors and time horizon.

Linkages between farm and non-farm activities

The concept of farm/non-farm linkages is most commonly used to describe the relation between the farm and non-farm sectors. These sectors can be linked directly via production linkages, in which case the linkage occurs either "upstream" or "downstream". When growth in the farm

sector induces the non-farm sector to increase its activities by investing in productivity or additional capacity for supplying inputs and services to the former, the linkage is upstream. It is downstream (and is often referred to as a value-added activity) in cases where the non-farm sector is induced to invest in capacity to supply agroprocessing and distribution services, using farm products as inputs.

The farm and non-farm sectors can be linked directly via production linkages, which occur either upstream or downstream.

Indirect expenditure linkages, on the other hand, occur when incomes generated in one of the two sectors are spent on the output of the other. Finally, there may be investment linkages between the two sectors, in which case profits generated in one are invested in the other.

RNF production linkages with local agriculture take place through sale of inputs to and purchase of output from the farm sector, with the agricultural output being used as an input for RNF activities (such as agroprocessing and distribution). Hence, the type of local agriculture will play an important role in determining the incentives for these kinds of RNF activity, as its characteristics will affect the profitability of RNF products and services as well as the market outlets for them. On the side of farm implements, for example, the average farm size determines whether there is a profitable market for tractors in addition to hand-tools. On the farm output side, the composition, timing and quality of output produced by local farms can influence the profitability (and optimal plant size) of agroprocessing industries. The type of technology used in cattle farming affects animal health and milk productivity which, in turn, affects the profitability of non-farm activities such as cheese production and milk pasteurizing.

There are expenditure linkages between RNF and farm activities in that income generated from farm activities is spent on the output of non-farm enterprises and vice versa. Therefore, the profitability and market outlet for these are determined by local incomes (level and distribution) and tastes. Smallholders, the poor, are more likely to spend on local goods and services in the RNF sector, while richer households would tend to spend on items from the modern manufacturing sector located in cities, or on imports. The implication of this is that technical change in agriculture that benefits smallholders will have a greater impact on the local economy via expenditure linkages than would technical change that benefits large landholders.

Where there are constraints on access to credit, investment linkages between RNF activities and the farm sector may also be very important. In such circumstances, non-farm income may be crucial for a farm household's capacity to make farm capital investments and purchase modern inputs. Vice versa, savings generated by farm activities may be at the basis of investments in non-farm activity.

PATTERNS IN RNF ACTIVITY: INTER- AND INTRAREGIONAL DIFFERENCES

This section presents and discusses evidence drawn primarily from household survey results gleaned from the review of some 100 studies focusing mainly on farm households⁵ (as opposed to rural town residents) in Africa, Asia and Latin America. It also draws on information from official country-level statistics – where these are available.

The focus on case study data is due to a variety of shortcomings in the availability and quality of official aggregate statistics on RNF income and employment. However, even carefully collected household survey data are not immune from problems; readers should therefore be aware of these and understand that the patterns and results presented here are reliable as indications of broad tendencies but less so as detailed estimates. Despite imperfections, the data are adequate in quality and quantity to allow confidence in the general results shown here (such as the general importance of non-farm income and employment, and its distribution over regions, zones and farm-size levels). Statistical uncertainty increases in the case of disaggregate observations, such as the division of non-farm income share into wage-paying employment and self-employment.

The importance of RNF activity – comparisons across developing country regions

Table 11 summarizes data on the shares of non-farm income and employment in total rural income and employment drawn from studies from the 1970s to the 1990s in the three regions.⁶ The sources for the data used are presented country by country in Appendix Tables 1 and 2.⁷

Average non-farm income shares are higher in Africa (42 percent) and Latin America (40 percent) than in Asia (32 percent). Even considering caveats about data quality and coverage, these findings are important and surprising for several reasons.

Non-farm income is a significant part of total income and, hence, is important for purchasing power and food security.

First, they show the significant importance of non-farm income relative to total income in rural areas, and hence its importance for purchasing power and food security. Second, one would expect the relative importance of non-farm income to be greater in regions with higher levels of GNP per caput. Indeed, richer regions tend to have better infrastructure and stronger agricultural sectors, both of which induce RNF development. Hence, the expected ranking would be Latin America, Asia, Africa. However, the fact that Africa is placed first in the ranking suggests that diversification incentives have an important role to play. In other words, although African households are poorer than those in the other regions, the incentive to diversify their incomes is strong (owing to low farm incomes, risks, etc.). This runs counter to conventional wisdom that sees African peasants as being little inclined towards rural income diversification.

TABLE 11

Share of non-farm income and employment in total rural income and employment ¹ Regions and subregions	Non-farm income share		Non-farm employment share		Average per caput GNP, ² 1995 (\$)
	Mean ³ (%)	Coefficient of variation	Mean ³ (%)	Coefficient of variation	
AFRICA	42	0.45	-	-	726
East and southern Africa	45	0.47	-	-	932
West Africa	36	0.36	-	-	313
ASIA	32	0.33	44	0.32	1 847
East Asia	35	0.19	44	0.29	2 889
South Asia	29	0.52	43	0.40	388
LATIN AMERICA	40	0.20	25	0.33	2 499

1 The data given are regional averages of country cases. The income shares represent the share of non-farm income in the total income of households that are mainly farm households (including the rural landless). The employment shares represent the share of households in the rural population (in both rural areas and small rural towns) for which non-farm activity is the primary occupation.

2 Average per caput GNP is calculated as the simple average over the countries covered by the case studies. It is based on estimates from World Bank. 1997. World Development Report 1997. Washington, DC.

3 The mean refers to the mean over the case studies considered for each region and subregion.

Nevertheless, within individual regions, the richer countries and subregions do tend to show higher shares and levels of RNF income (see Figure 38A-D). The two poorest subregions, West Africa and South Asia, nevertheless have fairly different non-farm income shares (36 and 29 percent, respectively). Differences in the nature of RNF activities are discussed in more detail below.

Finally, the variability of non-farm income shares (as measured by the coefficients of variation⁸ calculated over country averages) is highest in the poorest areas, i.e. the African subregions and South Asia, reflecting a diversity of conditioning factors (such as degree of agricultural performance, infrastructure, urbanization rates, etc.) even in situations of generalized poverty.

Growth patterns (i.e. changes in non-farm income shares over time) are difficult to discern from available income data, except in some case studies (mainly in Asia). Some approximations may be derived by comparing the data presented here with those emerging from earlier studies. For instance, the range of shares and averages reported here (based mainly on 1980s and 1990s data) exceeds that reported in Haggblade, Hazell and Brown,⁹ mainly based on studies conducted in the 1970s. Moreover, some case studies point to a positive growth of non-farm income shares over time in a number of countries (Bangladesh, Burkina Faso, China, parts of India, Java in Indonesia, western Kenya, Malaysia, Mexico, northern Nigeria, the Philippines and Taiwan Province of China).

Data concerning RNF employment (a key indicator) over years and countries show average shares of around 44 percent for Asia and 25 percent for Latin America (relevant data could not be found for Africa). In the case of Asia, this share is higher than the income share, whereas for

Latin America it is lower. It should be noted that a direct comparison between the employment shares and the income shares above is difficult because the shares may differ as a result of wage rate differences.¹⁰

The figures for Latin America and Asia show, on average, rapid increases in the share of people employed in RNF activity in the overall rural populations. For Latin America, Figure 39 shows that, in all cases except Peru (showing no difference) and Bolivia (showing negative change), absolute employment in the RNF sector grew much faster than farm employment and hence its share increased. In nearly half of the countries, the farm employment growth rate was negative, while the RNF employment growth rate was positive in all of them. The overall share of rural population with its principal activity in the RNF sector rose from 24 to 29 percent over (roughly) a decade.

FIGURE 38A

NON-FARM SHARE OF RURAL HOUSEHOLD INCOME AND PER CAPUT GNP, SELECTED COUNTRIES IN AFRICA

FIGURE 38B

NON-FARM SHARE OF RURAL HOUSEHOLD INCOME AND PER CAPUT GNP, SELECTED COUNTRIES IN ASIA

FIGURE 38C

NON-FARM SHARE OF RURAL HOUSEHOLD INCOME AND PER CAPUT GNP, SELECTED COUNTRIES IN LATIN AMERICA

FIGURE 38D

NON-FARM SHARE OF RURAL HOUSEHOLD INCOME AND PER CAPUT GNP, LOW-INCOME COUNTRIES

The nature of RNF activity and interregional differences

General patterns. The general finding emerging from available data is that the nature of RNF activity differs significantly over regions and subregions. The term "stages of RNF sector transformation" is used here to describe those pattern variations, and some general explanations are offered, based on the nature of RNF employment observed in the different regions. These are only "central tendencies" observed in the various regions, and within a given region there are substantial variety and exceptions.

The patterns in the levels and composition of RNF activity suggest that Africa and South Asia are in what can be considered the first stage of RNF sector transformation. During this stage, RNF activity tends to have a production or expenditure linkage with agriculture while farming

directly employs a large share of the rural population and RNF activity tends to be centred on the countryside itself, with little dependence on rural-urban links. Indeed, RNF activities are mainly home-based and small-scale production of non-tradable goods (goods that are mainly sold locally) produced in the countryside (rather than in rural towns). In terms of farm/non-farm linkages, during this first stage agriculture tends to depend on local supplies of farm inputs and services and on local processing and distribution of farm products, usually carried out by small- to medium-scale firms. Examples of these activities include: the manufacture or mixing of fertilizer; the manufacture, rental and repair of animal traction equipment; cart production; tractor services; crop processing; transport; the construction or maintenance of market facilities; and commerce. For example, Reardon et al.¹¹ show that, in the West African Sahel zones, more than 80 percent of local non-farm activity is in activities that have production linkages with local agriculture.

Latin America is in the second stage of RNF sector transformation, characterized by a tendency towards a greater mix of situations. The range includes activities based on linkages with agriculture as well as on others that are separate – for example tourism, mining and service sector activities, although the latter did grow out of a historical RNF sector transformation based on linkages with agriculture. The share of rural population dependent on farming to a large degree is lower than in Africa and South Asia. There tends to be a greater weight of rural-urban links as the basis for RNF employment than in first-stage RNF sector transformation, with nascent subcontracting of rural companies by urban or foreign businesses (mainly in light durables such as clothing) and a rapid rise in the labour force obliged to commute between the countryside and rural towns and intermediate cities ("rur-urban areas"). There is also a tendency for rapid "agro-industrialization" in commercial agricultural areas, both on a small scale and, particularly, on a medium to large scale. Another characteristic of this phase is the mixed levels of capital intensity, both within and across RNF subsectors. Thus, small-scale labour-intensive production in the countryside is observed alongside relatively capital-intensive enterprises producing the same output in local intermediate cities.

East Asia appears to be in the third stage of RNF sector transformation, identified by an intensification of the characteristics that differentiate the second stage from the first: a greater weight of urban-rural links manifested by the greater importance of more advanced forms of business linkages, such as subcontracting arrangements and labour commuting. A number of other tendencies also characterize this stage of transformation: the expansion of subcontracting beyond light durables to medium durables (such as vehicle parts); substantial RNF employment arising outside linkages with agriculture (even in economies such as Taiwan Province of China which passed through a first-stage RNF sector transformation that was very much linked to agriculture);¹² and rapid agro-industrialization in commercial agriculture.

FIGURE 39

PERCENTAGE SHARES OF RURAL NON-FARM EMPLOYMENT AMONG ECONOMICALLY ACTIVE RURAL POPULATION

Sectoral composition, subcontracting and rural-urban links. The sectoral composition of RNF tends to vary over regions. In Africa, most evidence shows that RNF activity is fairly evenly

divided over commerce, manufacturing and service sectors, linked directly or indirectly to local agriculture or small towns, and that it is informal rather than formal. In Asia and Latin America, the sector appears to be weighted more towards manufacturing and services.

Drawn from population censuses, information on the overall composition of RNF employment in Latin America indicates that 41 percent of RNF employment is in manufactures, 24 percent in commerce and 35 percent in services. Interestingly enough, the breakdown of urban employment in Latin America is very nearly the same as that of rural employment, contrary to the presumption that the urban economy would have a higher share of services and commerce. This result may vary with city size (with the rur-urban areas perhaps having higher shares of services and commerce) – however, this is a question that needs further research.¹³

Particularly in Latin America and Asia, there appears to have been a long-term increase in commuting by rural residents to non-farm jobs in burgeoning nearby intermediate cities or rural towns and vice versa (town residents commuting to farm labour jobs). Thus, barriers between rur-urban areas and the countryside are breaking down and segmentation is disappearing. Klein¹⁴ hypothesizes that, in Latin America, this is leading to a convergence of wage rates and the sectoral mixes in the non-farm sectors of town and countryside.

PICTURE 12

Manufacturing cans for food products

Rural agriculture and non-farm employment are closely linked through small-scale processing plants.

Subcontracting (between urban and rural enterprises) is another type of link between urban and rural areas that has been growing in importance. There indeed appears to have been an increasing trend towards outsourcing/subcontracting to rural enterprises and households by (larger) manufacturing and trading companies located in rur-urban or metropolitan areas, especially in Latin America and Asia, although the phenomenon appears to be incipient in the more industrial areas of Africa as well (for example in South Africa and Zimbabwe).¹⁵ It may well be that these cases represent a spectrum, with one developing into the other: from light consumer manufactures, organized by traders and undertaken in homes, into consumer and capital goods, subcontracted by urban enterprises and sold in urban markets or used as components in factory-produced goods. In Latin America, most of the current rural subcontracting appears to be focused on light consumer manufactures. Clothing and knitwear are typical activities which employ mainly women in their homes. Subcontracting of this kind allows traders to keep costs low, retain flexibility in volume and labour force and employ a female workforce with a history of skilled artisanal work in clothing. In Asia, it appears that urban-rural subcontracting is more of a spillover of industrial activity from the larger to the smaller cities and towns. It is taking place both in light consumer goods and in consumer and capital durables and has been gathering speed since the 1970s in a number of Asian countries (Indonesia, the Republic of Korea, Malaysia, the Philippines and Taiwan Province of China).¹⁶

In rural Latin America, there is a relatively new trend towards temporary employment in non-farm work.

Another trend, supported by evidence in discussions of the Latin American rural situation, is towards an increase in the temporary nature of non-farm work, which probably affects long-term trends in the RNF sector's composition and scale. It is probable that this is driven by outsourcing, agro-industrialization and commuting by the labour force. There are more households precariously working in a set of temporary, part-time jobs as a result of agro-industrial seasonal employment. Women are entering the workforce in great numbers to take up temporary agro-industrial jobs in Latin America and Asia. Moreover, changes in labour laws in parts of Latin America in the 1970s and 1980s made permanent hiring less attractive than the hiring of temporary workers (e.g. see Schaffner¹⁷ for the case of Brazil). But it is not clear whether agro-industrial firms are necessarily moving in the long term towards temporary employees, especially in product lines where there is a need for low turnover of employees and steadily increasing skills; moreover, it depends on the type of agro-industry, as simple processing in large-scale plants tends to use seasonal labour.

This relatively new tendency towards temporary employment (with enterprises' labour demand being driven by the need for labour flexibility) should be distinguished from the more common and different phenomenon of pluri-activity, where a rural person or household has several off-farm activities (over the seasons in the year or even over a shorter period), and from income diversification by a rural household. It is becoming more common in Latin America for pluri-activity to include seasonal interrural labour migration for farm work, especially from subsistence to agro-industrial areas, interspersed or overlaid with various non-farm activities. It is probable that the increasing provisional character of non-farm work will tend to magnify the phenomenon of individual pluri-activity.

Owing to the increased integration of rural and urban labour markets (induced by migration and the phenomena of commuting, subcontracting and the location of agro-industrial enterprises in rur-urban areas), forces outside the rural economy (mainly in the cities and in the mining sector) influence the labour use and overall sectoral composition of the RNF economy. Thus, for example, booms in urban construction and mining in a given country or in migration opportunities may have implications for the agricultural sector, since they are associated with the fact that a labour shortage raises local wages in rural economies. This was illustrated in Nigeria during the oil boom in the early 1980s. Such a wage increase can spur investment in labour-saving technology (as observed in Egyptian agriculture¹⁸ or in rural Chilean horticultural zones¹⁹). Hence, there can be shifts in employment shares induced by these extrarural forces.

Remittances reinvested in local construction and other services may cause rapid growth in those activities, as witnessed in Latin America. Furthermore, returning migrants affect the local non-farm economy through their financial capital and skills acquired in migration. In western Kenya, for example, migrants returning from Nairobi "cornered" the more skilled non-farm jobs.²⁰ There is also evidence of self-employment (in small enterprises) increasing in rural Zimbabwe with the decline in formal sector employment in Harare after the economic structural adjustment programme.²¹

Farm households, particularly in Africa, earn much more from RNF activity than from the farm wage-labour market.

Differences in the nature of RNF employment. The studies reviewed tend to show that farm households earn much more from RNF income than from the farm wage-labour market, particularly in Africa, but also in Asia and Latin America. In the studies from Africa for example, non-farm earnings were on average (with a simple average over study areas) about 20 times as important as farm wage-labour market earnings in the ten study zones where this comparison was possible. Moreover, most of the farm wage labour appeared to be supplied by the poorer households (because local wage employment has lower capital requirements than self-employment and local employment has lower transaction costs than migration employment) or by households hit by early crop failures. On the other hand, one tends to find a larger share of farm wages in the total rural income (but still less than non-farm income) in Asia and Latin America.

The small share of farm wage-labour income in overall rural income emerging from the African studies may reflect the preponderance of semi-subsistence cropping, which tends to use mostly family labour, while hired labour demand is usually a larger but still not an important part of total incomes in cash cropping areas. Other factors contributing to this result may be a relatively equal distribution of land and a low number of landless. Moreover, owing to low farm productivity and the low demand for hired farm labour, the farm wage tends to be lower than the average non-farm wage (and there is abundant evidence to support this).

All things being equal, a higher share of wage income in total RNF income implies a larger firm size. Only a few studies in each of the three continents were identified, however, as distinguishing non-farm wage income and self-employment by rural families. The African studies show (in more than half of the cases) that earnings from non-farm wage labour are more important than self-employment to farm families.²² The existing evidence for Africa shows that: the majority of enterprises start as one-person concerns and only a minority of microenterprises "graduate" to employing more than five people; and that most of the employment increases in small enterprises are generated by many small companies hiring an additional person rather than a minority of companies increasing employment substantially.²³ The resulting image is one of home-based, individual activities that do not have much capacity to grow or generate employment. By contrast, the evidence from the case studies in East Asia and Latin America points to the opposite image, i.e. one of a preponderance of wage employment (as opposed to self-employment).

The influence of zone type on RNF activity

Agroclimate and agriculture. The differential nature of the RNF economy across agro-ecological zones reflects the diverse nature of agriculture across those zones. There tends to be a negative relationship between the suitability of the agroclimate of the zone (mean and variance of rainfall, quality of soils, crop yields) and the share of income earned in migration by households in the zone. Where the agroclimate is poor, households tend to earn more from migration than from local non-farm activity. Households in the unfavourable agroclimatic zones need to diversify their labour supply beyond the zone to manage crop income risk or to cope with crop income shocks. The reverse holds for favourable agroclimates and more dynamic

agriculture – households tend to earn most non-farm income locally, mainly in activities generated by the production or expenditure linkages with the agricultural sector.

The nature and performance of local agriculture can affect the development of the RNF sector in a particular zone in several ways.

First, the local price of the agricultural product affects the profitability of downstream processing (e.g. the price of inputs), while the output price of food also has a more general effect on the RNF sector through its impact on wages.²⁴ Closely related to these two effects is the influence that a change in the agricultural wage has on the non-farm wage, as demonstrated by situations of rapid change such as that seen in the green revolution areas.²⁵ Indeed, an increase in the agricultural wage may spread to the non-agricultural sector and cause the unskilled non-farm wage to increase.

The factor bias of agricultural technology (labour-intensive or capital-intensive) and the seasonality of farm labour requirements influence the supply of labour to RNF employment. Crop technology may use labour so intensively that little is left for the family to use in off-farm activities. Such an image of labour-using agriculture constraining off-farm labour availability can be found in Asia's "monsoon economy",²⁶ with marked seasonality in rice cropping owing to rainfall patterns. Planting and harvesting occupy labour in peak seasons of farm employment. Demand for farm labour is generally low during the rest of the year, hence the need for off-farm sources of income during the slack period. Thus, one should distinguish between absolute underemployment and seasonal unemployment – which can be considered "reserve labour" required to meet high labour demand during the two peak periods within a cropping season. Reserve labour during slack periods is channelled to non-farm activities such as farmers' sideline businesses, cottage industries and small and medium-scale industries that are flexible enough to accommodate the seasonality of the non-farm labour supply.²⁷

The composition of agricultural output affects non-farm opportunities. The crop variety and harvest timing affect RNF opportunities through their effects on processing. Certain varieties of a given crop may not be as easily processed as other varieties. The harvest may take place little by little over the production season (as fruit ripens, for example), but having a successful processing operation at an adequate scale would require a much larger amount of fruit to be harvested all at once. There tends to be a correlation between agricultural diversification (away from starchy staples) and income diversification into non-farm activities. As agriculture diversifies into livestock products, fruit and vegetables, opportunities for value added (agroprocessing) increase. Such diversification is generally induced by increasing incomes, which raise demand for foods other than starchy staples.

Yields and harvest volumes affect RNF activity. Yields may be so low that there is insufficient marketable surplus to support downstream processing and distribution businesses. The volume or quality of output may be insufficient or of an inappropriate nature to provide economies of scale for local non-farm activity linked to agriculture or to justify investment in processing plants and local transport capacity.

Agriculture can also affect RNF activity in indirect ways. Thus, constraints on agriculture can "push" farmers to diversify incomes. In areas with poor agroclimates and risky and less dynamic agriculture, off-farm income can be important for coping with this risk (compensating for poor harvests and providing cash to buy food). The off-farm income in those areas tends to be more dependent on income from migration or from towns, i.e. income sources that are not subject to fluctuations similar to those of the local farm economy.

However, while pushing farmers to diversify income sources through RNF activity, constraints on agriculture can at the same time limit their capacity to do so. Land poverty can constrain non-farm activity by limiting the capacity to borrow for such activity and by limiting the cash revenues from farming needed to start non-farm businesses or support migration. There is ample evidence of important informal credit constraints for startup and working capital for small non-farm businesses in rural areas.

There are a significant number of empirical case studies on the magnitude of the impact of agricultural sector performance on the RNF sector through farm/non-farm production and expenditure linkages. In general, the impacts of agricultural output growth on rural non-farm income and employment are strong and tend to be stronger particularly where the production linkages are well developed. The main findings of some of these studies are presented in Box 15.

BOX 15

THE MAGNITUDE OF FARM/NON FARM LINKAGES

On the basis of state- and district-level data for rural areas, rural towns and the combined area in India, Hazell and Haggblade¹ found that on average a 100 rupee (Rs) increase in agricultural income is associated with a Rs 64 increase in RNF income, distributed with Rs 25 in rural areas and Rs 39 in rural towns. Infrastructure, rural population density and farm income levels increase the multiplier. Thus, the figure is as high as 93 in states characterized by high agricultural productivity, high rural population density and rur-urbanization, such as Punjab and Haryana, but only 46 in low productivity states (such as Bihar).

The IFPRI Annual Report 1985 shows that, in North Arcot district in the Indian State of Tamil Nadu, a 1 percent increase in agricultural output is associated with an additional 0.9 percent growth in non-farm employment. Also from North Arcot district, Hazell, Ramasamy and Rajagopalan² found (using 1982/83 data) that a Rs 1 increase in agricultural value added generated Rs 0.87 of additional value added in the non-farm sector.

Bell, Hazell and Slade³ found that, in the Muda River region of Malaysia, an increase of agricultural income of 1 percent induced an additional increase in other rural income of 0.83 percent.

Using data from Sierra Leone and Nigeria, Haggblade, Hazell and Brown⁴ find multipliers in the order of 1.5; hence a \$1 increase in agricultural value added in those African countries generated an additional \$0.5 of rural income which is lower than the figures from Asia quoted above.

The African multiplier was generated in a proportion of about 80 percent by expenditure (as opposed to production) linkages, while in the Asian cases the expenditure linkage effect is a lesser share of the total: in the Muda case with which they contrast it, consumption linkages account for only 60 percent of the total multiplier, and in the North Arcot case, only 50 percent.

1 P. Hazell and S. Haggblade. 1991. Rural-urban growth linkages in India. *India Journal of Agricultural Economics*, 46(4): 515-529.

2 P. Hazell, C. Ramasamy and V. Rajagopalan. 1991. An analysis of the indirect effects of agricultural growth on the regional economy. In P. Hazell and C. Ramasamy, eds. *The green revolution reconsidered: the impact of high-yielding rice varieties in South India*. Baltimore, USA, The Johns Hopkins University Press.

3 C. Bell, P. Hazell and R. Slade. 1982. *Project evaluation in regional perspective: a study of an irrigation project in northwest Malaysia*. Baltimore, USA, The Johns Hopkins University Press.

4 S. Haggblade, P. Hazell and J. Brown. 1989. Farm-nonfarm linkages in rural sub-Saharan Africa. *World Development*, 17(8): 1173-1201.

Infrastructure and rural town density. Regardless of agroclimate, the denser the infrastructure, rural town services and population, the greater the earnings from the RNF sector. This tendency appears more marked in favourable agroclimatic zones. In general, the quality and quantity of hard infrastructure (e.g. roads) and soft infrastructure (e.g. schools) tend to be correlated with population density and the development of rural towns (hence, for example, the difference in infrastructure noted between Asia and Africa²⁸). More developed infrastructure and denser population means lower transaction costs for market products (farm or non-farm) and a greater availability of inputs (electricity, tractors, etc.) at a lower cost. Hence, infrastructure quality and quantity have often been identified as key determinants of farm investments and of non-farm business investments (see Box 16, p. 306).

Infrastructure quality and quantity are often identified as key determinants of farm investments and of non-farm business investments.

However, even infrastructure presents some ambiguities in terms of its impact on the RNF economy and employment as well as on sectoral income inequalities. As poorer households tend to be located in the "hinterlands" of the rural zone and thus further from roads and rural towns, depending on how they are undertaken, infrastructure improvements can either increase or decrease sectoral income inequalities. This is illustrated by the opposite cases of Taiwan Province of China and the Republic of Korea. In the former, infrastructure improvements were carried out over regular, cross-country grids, thereby inducing a relatively even rural industrialization. Improvements carried out in the Republic of Korea, on the other hand, brought about concentrated poles of economic development. The agglomeration of capital-intensive firms

in rur-urban areas where infrastructure is available can undermine small labour-intensive firms in rural towns and villages, reducing employment per unit of non-farm output even though overall employment may rise.

BOX 16

FOCUS ON THE ROLE OF INFRASTRUCTURE POLICY: COMPARING TAIWAN PROVINCE OF CHINA AND THE REPUBLIC OF KOREA

In Taiwan Province of China, the shift made by rural households to non-farm sources of income began in the late 1960s. Structural reforms in the late 1960s stimulated the spectacular expansion of an outward-oriented export economy. Manufacturing grew by 20 percent per year, leading the way in the sustained double-digit growth of GNP. The consequent pace of labour absorption in the industrial sector took the steam out of the population pressure on the land frontier. The growth of industry is evenly spread across space – a well-known and much lauded feature of the Taiwanese economy. Urban centres are themselves geographically dispersed and infrastructure is also well distributed, making it possible for industrial estates to flourish in the smaller towns.¹ Income diversification trends for the Republic of Korea’s farm households diverge radically from those in Taiwan Province of China. The contraction of farm income in farming households was minimal throughout the rapid growth period of the Republic of Korea in the 1960s and 1970s. The share of wage earnings also remained fairly stable. Several factors contributed to this divergence. First, manufacturing activity was concentrated in just two growth poles: Seoul in the north and Pusan in the south, along with the adjacent provinces. The population in the other provinces remained dependent on agricultural occupations. Second, technological change in Korean agriculture was not characterized by heavy farm mechanization. This kept rural labour tied down to the farms and subjected labour demand to seasonal fluctuations. Third, infrastructure and services were heavily concentrated in the urban centres. The option of commuting from the countryside was constrained by an inadequate rural road network. Instead, there was considerable migration to the cities.² Recently, economic policy in the Republic of Korea has begun to veer away from the urban-based, capital-intensive industrial strategy. With the growing gap in urban and rural average incomes and underemployment of farm labour, emphasis has shifted to promoting RNF activities as well as agricultural development.³

- 1 S.P.S. Ho. 1986. Off-farm employment and farm households in Taiwan. In R.T. Shand, ed. Off-farm employment in the development of rural Asia. Canberra, National Centre for Development Studies, Australian National University.
- 2 F.K. Park. 1986. Off-farm employment in Korea: current status and future prospects. In Shand, op. cit., footnote 1.
- 3 J.-S. Choi. 1997. Policies promoting rural non-farm activities in rural development programs in Korea after the Uruguay Round. Paper presented at the 23rd Conference of the International Association of Agricultural Economists, August 1997, Sacramento, California, USA.

Furthermore, better roads – and improved infrastructure in general – can be a "double-edged sword" for rural inequality, both overall and sectoral. Poor infrastructure and the consequent high transaction costs provide local protection against outside competition. Opening up the rural economy through commercial deregulation and liberalization as well as by improving infrastructure removes the de facto protection otherwise provided by economic distance and high transaction costs. The distributional outcome is uncertain and will depend on the involvement of lower-asset households as producers or labourers in activities favoured or harmed by the abolition of de facto protection and the changes that these reduced transaction costs incur in the degree of integration between local and distant labour markets. Increased integration will provide poor or landless households with opportunities for non-farm employment in rural farms and medium-sized cities.

The nature and quantity of infrastructure determine how much a resource-poor area can rely on local RNF activity as opposed to migration.

The nature and quantity of infrastructure determine how much a resource-poor area can rely on local RNF activity as opposed to migration. Proximity to cities and mines, together with efficient road and rail links from rural areas to these employment centres, usually increases the share of migration income in overall off-farm income. The studies reviewed in Africa show that, in areas that are not close to major cities or mines, rural households' labour supply to the local non-farm sector is much greater than it is to the migratory labour market. Indeed, in the ten studies reviewed with study areas not near major cities or mines (in Burkina Faso, Ethiopia, Kenya [western], Mozambique, Malawi, the Niger, Senegal, the Sudan, the United Republic of Tanzania and Zimbabwe), local non-farm sector earnings constitute about 80 percent of total non-farm earnings, and migration earnings 20 percent. By contrast, in zones that are close to major cities and to mines or plantations, the migratory labour market appears to be much more important than the local non-farm sector for rural household incomes. In the three studies reviewed that had study areas with such characteristics (in Botswana, Namibia and South Africa), local non-farm earnings constituted about 25 percent, and migration earnings 75 percent, of total non-farm earnings.

The story appears to be different where infrastructure is better and denser and migratory channels are well established, as is seen in certain cases from Asia and Latin America. This is illustrated in the Philippines, where migratory incomes increased after the onset of the green revolution, as families used the capital generated by profitable rice production for investing in education and migration.

Thus, improved hard infrastructure, which can substitute the advantage offered by proximity of rural areas or farms to cities and urban centres, can have two opposite effects on the development of the RNF sector:

- it can favour its growth through increases in overall activity resulting from better access to marketing and lower transaction costs;
- it can create a labour shortage, since the labour force prefers to migrate to urban centres, and thus constrain the sector's growth.

Determinants of RNF activity: interhousehold differences

The motives for rural household income diversification into the RNF sector were explored as a function of related incentives and capacity in the section, Reasons for household participation in RNF activities, p. 285. The present section emphasizes several points related to empirical evidence on incentives and capacity as an introduction to discussing the effects of RNF activity on household welfare.

Responsiveness to relative prices. Field studies show that rural households are responsive to differential returns to activity in the farm and non-farm sectors (although this responsiveness is manifested only where the household has the capacity to participate), given the similar risk profiles of activities in the two sectors. This belies some of the traditional image of peasant households not being market-oriented, especially with respect to labour market opportunities. Households allocate labour to the non-farm sector either because relative returns are better and/or more stable in that sector, or because farm output is inadequate (because of short-term shocks, such as drought, or longer-term constraints, such as lack of land). This allocation can either be a long-term strategy (to manage agricultural risk, compensate for land constraints or take advantage of profitable opportunities off-farm) or a short-term strategy to cope with harvest shortfalls and to smooth incomes over years where there is a failure in or absence of the crop insurance or consumption credit market.

Credit markets. Households can be pushed by underdeveloped or constrained credit markets to earn income off-farm so as to pay for farm inputs and capital. There are ample illustrations of this in recent studies, notably on Africa.²⁹ A possible pattern emerges in evidence from case studies in Kenya, Mali, Mexico and the Philippines that credit market failure drives farm households to undertake local non-farm and farm investments in two steps: i) rural households migrate to earn cash, returning to rural areas to reinvest the cash in farm capital, cattle, education and housing; ii) with their skills – perhaps learned or honed in migration – and education, they set up local non-farm enterprises (with relatively high capital entry barriers, such as carpentry).

Moreover, given the frequent inadequacy of land to serve as collateral for agricultural loans in informal and formal credit markets, steady pay in the non-farm labour market is used by creditors as substitute collateral for loans. Hence, non-farm earnings allow preferential access to local credit sources, and these non-farm and farm strategies converge to concentrate capital.

Education is a significant determinant of RNF business sector success, wage levels and productivity, and it is therefore important for creating a more "egalitarian" income distribution.

Education. The importance of education as a determinant of RNF business success, wage levels and productivity is now widely recognized. Studies of rural industrialization in Asia have emphasized the importance of skill acquisition for a more even distribution of RNF employment, again contrasting Taiwan Province of China and the Republic of Korea in this regard.³⁰ Given the strong incentive for poor households to diversify their income sources, it is no wonder that one of the first major investments of farmers in cash-cropping zones is education (witness the boom in local investment in rural school buildings in Mali immediately after the devaluation that increased cotton revenues³¹).

Education's importance for a more "egalitarian" income distribution is illustrated by Collier and Lal³² with reference to central Kenya. More equitable access to education, access to urban wage employment and scale-neutral agricultural innovation (i.e. that could be adopted by both small- and large-scale producers) were what achieved the equal distribution of development. Off-farm income (especially migration income from government employment) was channelled into agriculture. As productivity-increasing innovations were scale-neutral and thus independent of farm size, investment generated with off-farm and migration income (of which education was a strong determinant) caused productivity increases for poor and rich households alike, thereby further enhancing the equalizing effects of access to off-farm employment. Access to off-farm income permitted poorer households to be involved in investments in tree crops (with a long gestation period) and hybrid livestock (sometimes with a high mortality rate). Such investments gave higher returns but also posed greater risks.

PICTURE 13

[Handmaking terracotta plates, used for cooking tortillas in Mexico](#)

Small rural enterprises produce utensils and crafts which are sold in local villages as well as in city markets.

The other side of the coin is that, where education is poorly distributed, non-farm subsectors or activities within a subsector that require an educated labour force will have highly unequal income distributions. According to their importance in the local economy, therefore, overall inequality may be increased. For example, Adams³³ found that, in Pakistan, although non-farm income had an overall equalizing effect on the income distribution, this was not the case for all specific sources of off-farm income. In fact, the "education-intensive" sources (such as government employment) were found to have an unequalizing effect as they were accessible mainly to wealthier households with more education.

However, there is even ambiguity regarding the relative impact that education has on the sectoral income sources. The little evidence available tends to support the hypothesis that the economic returns from schooling are higher in the non-farm than in the farm sector. In their study of Mexican villages, Taylor and Yunez-Naude³⁴ document high returns from schooling in both farm

and non-farm activities. They also found that education induced households to shift from farm to non-farm activities. These findings are sensitive to schooling type (in this case, family versus farmer education), and results are also likely to differ between other types of education (e.g. agricultural extension versus general schooling) and location (e.g. in traditional or green revolution farming areas). In any case, provided that access to rural education is not linked to households' ability to pay, rural education can be expected to have a greater effect in reducing inequality in non-farm income than in farm income, but at the same time to equalize the overall size distribution of income.

Such ambiguities might explain situations such as that in Palanpur, India,³⁵ where non-farm incomes became more equal preceding and during the early stages of the green revolution, but then progressively more unequal (creating a greater source of overall inequality) up to the late green revolution period. In this case, a mix of economic forces had produced a situation where easy-entry off-farm jobs became more plentiful but were relatively low-paying. However, the boom created the conditions for an increase in demand for non-farm products and services and an expansion of relatively better paid non-farm employment opportunities. Such employment opportunities were also attractive to the educated and relatively wealthy households in the village, which in turn were better placed to win in the competition for such jobs. This second effect presumably outweighed the first. Interestingly, this pattern mirrors the common finding of an increase in the demand for farm wage labour (a low-skill, low-barrier employment category) in the early stages of the green revolution, with a levelling off of this demand as the revolution matures and early profits are turned into farm capital accumulation.

A particularly interesting study with regard to the nexus between education, non-farm employment and income inequality is that of central Luzon in the Philippines. The study was undertaken by Estudillo and Otsuka,³⁶ using non-farm income data spanning several decades for farm households in a green revolution area. They asked whether the observed increase in non-farm income was due to the expansion of human capital (and thus would favour the educated segment of the farm population), or to the expansion of employment opportunities for the rural labour force at large, which would improve the income status of farm households more equally. They found that education has a strong effect on non-farm earnings (but not earnings from green revolution rice farming), both before and after the green revolution, and that educated households generally shift away from farming towards non-farm employment. They noted that a large share of this employment is in urban areas and in migration, both of which require education for entry. They also noted that: "Households who have higher non-farm income were notably the beneficiaries of land reform who invested in their children's education so as to take advantage of increasing returns to education."

Initial household wealth. A household's prior wealth is an important determinant of the degree and nature of its RNF participation. Poor households tend to concentrate on the lower-paying, easy-entry farm labour market as well as on labour-intensive RNF wage employment, and less on RNF self-employment. Given the underdevelopment of credit markets for financing non-farm businesses, own-cash sources (in particular from livestock, cash cropping and migration) are important to start non-farm enterprises and pay the transaction costs to obtain non-farm employment.

The effects of RNF activity on farming

Just as the nature and characteristics of agriculture influence RNF activities, the latter can affect agriculture in a number of ways. To start with, the nature of agro-industrialization³⁷ can increase the value of land (as it has, for example, in horticultural areas of Chile, Peru and Bolivia) as well as the profitability of the products entering the agro-industrial system (with a relative shift away from subsistence crops). The organizational structure of agro-industry and the type of product produced will affect cropping patterns and the spinoffs to the local economy, depending on the scale and factor bias of the technology used.

Non-farm activities affect the availability of cash for the farm capital investments needed to adopt appropriate technologies.

Income from agro-industrial activities affects farm households' capacity to invest in farm capital and buy modern inputs. Non-farm activities affect the availability of cash to make the farm capital investments (and farm input purchase) needed to adopt appropriate technologies. Thus, non-farm activity by farm households is potentially important for long-term food security because it can increase the use of farm inputs and hence farm productivity and the ability to intensify production. In Africa, non-farm income is usually the main source of cash, or is a "collateral substitute" used to obtain credit. Recent field survey evidence from Burkina Faso, the Niger and Senegal shows that, in most of the Sahel region, formal rural credit is lacking except in cotton and peanut schemes – although for the latter there is less available than previously – and that the informal credit markets are very underdeveloped. Access to non-farm income is crucial for purchasing farm inputs, for example peanut seed, fertilizer and animal traction equipment. This can create a dynamic effect, as cash from the non-farm sector is reinvested in farm equipment, thus creating capital that substitutes for labour and reduces farm labour demand.

The RNF sector also affects the factor and product prices faced by farmers, and hence farm profitability and crop mix. Local cottage manufacturing and services can reduce the price and increase the availability of farm inputs and adapt them to the needs of local farmers, while agroprocessing and distribution can affect the level and stability of output prices.

The converse implication is that RNF constraints "downstream" from the farm sector can block farm sector development by raising processing and distribution costs, thereby undermining farm profits. For example, in northern Senegal, rapid reconnaissance surveys show that the absence of transport and commerce facilities have led to the discontinuance of cowpea cultivation (after its introduction and subsequent production increases). Similarly, survey evidence from Mali shows that a lack of processing services for maize is constraining development of the maize subsector.

Likewise, RNF constraints "upstream" from the farm sector can also hinder development of the farm sector. Agriculture may not spur substantial upstream (input demand) linkages (e.g. for animal traction equipment or tied-ridgers) in a given area if companies in the rural area or local town are producing equipment that is too costly for small farmers or appropriate for only a subset

of local soil types and terrains. For example, costly or inappropriate tied-ridger equipment in Burkina Faso hindered development of soil conservation on farms in the cotton zone.

Participation in the RNF economy can lower overall income risk for farm households, increasing the incentive to adopt risky but more profitable farm technologies and to commercialize agriculture. Access to non-farm income may enable a farm household to increase the area of land under cultivation, use more purchased inputs (owing to both increased liquidity and increased security in case of crop failures) and diversify farming into cash crops that raise farm incomes. In general, access to non-farm income may give a household the breathing room to undertake longer-term investments (such as perennial cash crops).

An important point in the analysis of sustainable agricultural systems is that RNF activities can sometimes compete for farmers' resources, and this can affect the factor bias of farm technology. If non-farm labour returns are better than those of farm labour marketing jobs or on-farm labour use then, depending on the integration of the labour market, they will drive up the farm wage, thereby reducing farm labour demand and increasing the capital intensity of farming and/or leading to a shift to less labour-intensive crops. Especially where cropping is most risky, RNF activities can compete for labour and cash for crop technology improvements in the cropping season and for investments in land improvements in the dry season. From the point of view of sustainable agriculture, the implication is that agricultural households might not want to adopt productivity and conservation measures if the payback is not higher or faster than off-farm alternatives: this means that the cost-benefit criterion for resource conservation should include not merely positive profitability but also the level and stability of profitability relative to alternative (non-farm) uses of funds and labour.

A further implication of this last point is that the allure of non-farm opportunities can make labour-intensive agricultural technologies unattractive to farmers, causing technology adoption and extension programmes to fail.

In assessing the sustainability effects of RNF, one should consider that RNF employment can reduce the pressure on land in fragile areas. To the extent that they reduce the incidence of poverty and direct dependence on land resources, non-farm activities can break the vicious cycle of poverty-extensification-degradation-poverty. These activities generate cash that can be used to buy capital inputs to help intensify production on a given piece of land, thus reducing the need for farm households to push on to fragile margins. Non-farm activity can help to smooth income, acting as a crop insurance mechanism and partially displacing the "precautionary motive" for holding livestock and alleviating problems associated with overgrazing. But this effect is ambiguous. In areas without a good rural banking system, farmers often reinvest non-farm income in cattle as an asset accumulation instrument.

EFFECTS OF RNF ACTIVITY ON HOUSEHOLD WELFARE AND INCOME DISTRIBUTION

The RNF sector and food security

RNF activity makes a significant contribution to food access and food security.

There is little controversy about the short-term effects of participation in RNF activity on food access. A given household copes with a drought or other cause of harvest shortfall by, among other things, working off-farm and raising the cash to fill the food deficit. A case study from Burkina Faso before and after the 1984 drought illustrates the typical consequences: households with a greater income diversification were able to buy food and weather the effects of the drought, and also tended to have higher overall incomes than those that were not able to supplement their farm incomes with RNF incomes. Moreover, RNF income is often a major source of savings that farm households in poor areas use to purchase food in difficult times. Finally, as discussed previously, RNF activities influence rural food security through their various linkages with farming.

The controversy begins to emerge when one is dealing with longer-term food security effects. Namely, is it true that working off-farm (or in cash cropping) will reduce household food availability and lead to malnutrition as a result of competition between farm work and food production? The available data do not support this argument. As part of a multicountry study (comprising 13 case studies in Africa, Asia and Latin America) von Braun and Pandya-Lorch³⁸ sought to determine whether malnourished poor households depended more than non-malnourished households on non-farm income sources, and found that the differences were not significant. Other recent research has produced similar results (e.g. a study in Mexico³⁹).

Effects of RNF employment on income inequality: entry barriers

It is often believed that RNF employment, and thus the microenterprise promotion programmes designed to stimulate this sector, will reduce rural income inequality and, as a result, social and political tensions. This position is typically presented as a hypothesis that non-farm activity reduces the inequality of total income in the "village" and hence has an "equalizing" effect.⁴⁰ Such an assertion, however, ignores the possibility that the income generated by such activities may be even more unequally distributed in favour of the wealthy and may therefore actually worsen income distribution, even in spite of increasing income levels in all population strata. Furthermore, in this type of reasoning non-farm income is treated independently of farm income and considered more as an income transfer, i.e. non-farm income compensates for a bad harvest or insufficient land. In other words, for a given household, with a given level of farm income, an increase in non-farm income clearly raises total income by the same amount, enriching the household and "smoothing income" by compensating a drop in agricultural production, for example.

Distribution of non-farm income across landholding classes and overall income strata. The effect of non-farm employment on overall income inequality can be analysed through the relationship between non-farm income, on the one hand, and farm income and/or landholdings, on the other. The implicit view is often that the two move in opposite directions, so that non-farm and farm incomes essentially offset each other. In other words, smaller farms have higher non-farm incomes than large farms, or at least the share of non-farm income in total income declines as total household income increases.

RNF activities do not necessarily improve rural income distribution.

In reality, however, evidence regarding the relationship between the share of non-farm income in total household income and the level of total income and/or the size of landholdings is very mixed. Figure 40A-C presents a selection of different patterns of relationships (from field survey studies – see Appendix Table 3) between non-farm income shares and levels and total household income or landholdings. The selection tends to be representative of the spectrum of patterns found in the different regions.

At one extreme, there is some evidence of a strong negative and linear relationship (following conventional wisdom) between the non-farm share in income and total household income or landholding (Figure 40A). At the other extreme, however, there are cases of a strong positive and linear relationship (contradicting conventional wisdom). This type of relationship is illustrated in Figure 40B. Reardon⁴¹ also found in 18 field studies in Africa that, on average, the share of non-farm income in total income is twice as great in upper-income tercile households as in those of lower terciles. Other cases fall between these two extremes (Figure 40C).

FIGURE 40A

SELECTED CASES OF A NEGATIVE RELATIONSHIP BETWEEN THE SHARE OF NON-FARM INCOME AND TOTAL INCOME OR LANDHOLDINGS

FIGURE 40B

SELECTED CASES OF A POSITIVE RELATIONSHIP BETWEEN THE SHARE OF NON-FARM INCOME AND TOTAL INCOME OR LANDHOLDINGS

FIGURE 40C

SELECTED CASES OF OTHER RELATIONSHIP BETWEEN THE SHARE OF NON-FARM INCOME AND TOTAL INCOME OR LANDHOLDINGS

These results focus on the share of non-farm income among income and landholding classes. But how do the absolute levels of non-farm income differ among economic classes? Evidence shows that, in many cases, the ratio of the absolute levels of non-farm earnings between the highest and lowest income strata is much higher (i.e. more skewed) than the ratio of shares. Not only that, there are even cases where declining shares of non-farm income for higher-income levels are nevertheless still associated with increasing absolute levels of non-farm incomes.

A key factor behind this is likely to be the existence of substantial entry barriers (e.g. licence fees, equipment purchase or rental, skills acquisition) to activities with high returns to labour. Hence, the low-asset households can spend a large share of their time in non-farm employment, but the wage (hence the level of off-farm income) they will receive is low. On the other hand,

higher-income households, may spend the same or a lower share of their resources in non-farm activities but earn much higher returns per unit of resources "invested".

It is indeed common in situations with this type of pattern to find large differences in the nature and labour returns of the typical set of non-farm activities undertaken by the poor and rich, or by small- and large-scale farmers. Activities that are intensive in skilled labour and/or physical capital (e.g. cottage manufacturing, transport requiring the use of a vehicle, shop commerce and salaried jobs) have the highest labour returns, as expected, and are undertaken by the wealthiest household strata. The poor (i.e. those with limited assets and/or skills) tend to undertake activities that are intensive in unskilled labour (such as farm wage labour, market porter jobs, wood gathering and unskilled factory jobs).

Case studies also point to the existence of entry barriers to non-farm activity, with evidence of "super profits" in certain non-farm activities and of very high non-farm wages relative to farm wages in several areas. The levels shown in these studies appear well above those justified by intersectoral productivity differences and skill/education levels, suggesting labour market segmentation between farm and non-farm sectors and within the non-farm labour market. It may also be proof of divisions or "lumpiness" in certain subsectors. For example, there is sometimes just enough demand for one full-time blacksmith in a village, and as demand exceeds the smith's capacity, it is rationed through high prices. Furthermore, monopolization of certain activities may occur as a result of caste divisions and other social features that require labour supply to come from specific groups (e.g. blacksmiths and musicians).

Evidence of effects of non-farm income on income distribution. Another methodology that has often been used for analysing the equalizing or "unequalizing" effects of non-farm income is based on a calculation of Gini coefficients,⁴² with and without non-farm income, or on a decomposition of the changes in the Gini coefficient as non-farm income changes. The results from such calculations vary widely from case to case.

Again, there is evidence of non-farm income having an unequalizing influence.⁴³ For instance, by applying the Gini coefficient method to the poor and risky agricultural zone of northern Burkina Faso, Reardon and Taylor⁴⁴ found that, from 1983 to 1985, the overall income distribution was more unequal than for farm income alone owing to the unequalizing effect of non-farm income. Thus, the addition of non-farm income "worsened" income distribution. Indeed, a large share of overall income inequality is attributable to non-farm employment. Another example is that of a fast-growing green revolution zone of India (Palampur in Uttar Pradesh), where Lanjouw and Stern⁴⁵ found that non-farm income had a strong unequalizing effect in 1983/84 while, interestingly, it had had an equalizing effect in the same zone two decades earlier.

On the other hand, there are examples of non-farm income exerting an equalizing effect; that is, they lower the overall Gini coefficient. Reardon and Taylor,⁴⁶ using the Gini comparison method with cross-section data for the southern zone of Burkina Faso (which has a more favourable agroclimate and thus a dynamic agriculture), found non-farm employment to have an equalizing influence on incomes. Chadha⁴⁷ found income distribution in Indian Punjabi villages to be more unequal for total household earnings than for non-farm earnings. In other words, non-farm earnings were more equally distributed. For rural Thailand, income distribution is more unequal

for farm income than for income from all sources,⁴⁸ which again suggests equalizing effects of non-farm income.

Several cautionary notes are in order, however. It is difficult to tell from data alone how overall income would be distributed in the absence of the non-farm income. Assuming that non-farm income is more unequally distributed than overall income, at face value it would look as though non-farm income increased inequality. However, it is possible that if those currently employed in the non-farm sector were engaged in some alternative employment, such as agricultural labour, agricultural wage rates might be lower and overall income inequality might rise. So rather than raising inequality, the non-farm sector could actually be preventing inequality from rising even further. Moreover, on their own, the Gini coefficients do not indicate what direction and degree of correlation may exist between the two income sources, and hence the two distributions.

Interpreting results on RNF employment and income inequality. The results cited here can be interpreted as a function of households' incentives and capacities to undertake RNF activity. Inverse (or U-shaped) relationships between non-farm income shares and overall income or wealth imply a relatively high share of non-farm income for the poorest households and are observed most frequently in Asian and Latin American studies. These relationships are associated with the following:

- The availability of jobs with a high labour-to-capital ratio and low barriers of entry for poor (very low-asset) households. That availability in turn appears to be associated with: relatively good infrastructure, high population and market densities, dynamic agriculture, unequal landholdings and the development of rural towns outside metropolitan areas.
- Possibility for households with average asset holdings to specialize in land-intensive crop production; similarly, this is more common in green revolution areas.
- The ability of high-asset households to diversify into more capital-intensive activities, either self-financing this diversification or using their assets as collateral to obtain credit. Asset holdings enable high-asset households to diversify production for expected income as well as risk motives.

By contrast, in areas that exhibit a positive association between non-farm income shares and total income or wealth levels (as is the case for many of those covered by the African studies), the conditions tend to be very different. There is a scarcity of labour-intensive activities that have low entry barriers; this is so in both non-farm and farm sectors that are characterized by an underdeveloped farm labour market and predominantly traditional production technologies using family inputs. Additional factors include a relatively equal land distribution (and a virtual absence of landless households), a low population and infrastructure density, a relatively low level of rural town development and significant entry barriers for investment in capital-intensive subsectors.

Are income inequalities in the farm and non-farm sectors associated?

Having discussed mixed reports of how the rural non-farm economy affects overall income inequality as well as the conditions for the variation in these outcomes, there still remains a set of relevant questions with important policy implications to be considered. These issues centre around the degree and nature of the association of income inequalities across the farm and non-farm sectors.

Two considerations are whether these inequalities are jointly driven by a common set of external factors that affect households' capacity to generate both farm and non-farm income, and how such factors might be addressed to increase the participation of the poor in the non-farm sector?

Another issue is whether the inequalities in the farm and rural non-farm sectors are directly related, so income generated in one sector, together with the asset accumulation it allows, affects the capacity for income to be earned in the other. More simply, is the asset position of a household a good predictor of its ability to earn non-farm income?

It can thus be hypothesized that sectoral inequalities are mutually dependent (at least partially). The discussion of this hypothesis revolves around productive factors (labour and capital versus land), since it is because of the need for these factors that the different sectors, and hence the inequalities in their income distributions, interact.

First, there may be competition for labour use between the two sectors, and rigidities in the technology of a given sector may block labour availability for development of the other. For example, a traditional labour-using technology can keep smallholder labour "bottled up" on the farm and thus make it unavailable for off-farm activity. The latter corresponds to a situation frequently reported in Asian case studies, i.e. that rural industrialization is constrained until farm mechanization frees labour from farming, at which time seasonal underemployment is reduced because members of farm households are able to specialize in higher-paying non-farm activities. Thus investment in technological change in the farm sector, which may only be accessible to the asset-rich households, is needed to free up labour for the non-farm sector.

There is also evidence of an interrelationship between rural capital and non-farm labour markets, as proof of a steady pay from non-farm employment is frequently used as collateral for loans in the rural sector. This is true in Kenya and Benin, for example. Constraints on earning non-farm income also translate directly into constraints on farm capital accumulation. Where rural credit markets are underdeveloped, non-farm income is the main source of cash for farm investments (migration, livestock and cash crop sales are in second place), and non-farm employment has an important effect on farm investments.⁴⁹ As these farm investments determine farm productivity and incomes, which in turn affect cash available for non-farm business starts, this can unleash social differentiation and increase inequality.

Dressmaking in a small factory

Activities not directly linked to agriculture demonstrate second-stage RNF transformation.

Farm households can sometimes use the migratory labour market to break the vicious cycle of poverty of farm assets and inability to earn non-farm income locally. They then use the migration remittances and skills learned through migration to start non-farm businesses, buy farm capital (mainly equipment for cash cropping, cattle and, occasionally, land) and invest in education.

Inequality in access to scarce land also translates into inequality in non-farm employment opportunities because agricultural cash incomes, the use of land as collateral for credit and the political influence that land wealth often implies, can all affect involvement in RNF sector activity. The initial unequal access to land may be even further accentuated, as it appears that inequalities in non-farm earnings result in unequal landholding patterns (e.g. in western Kenya⁵⁰). There is also evidence from Rwanda in a study by André and Platteau,⁵¹ who note that:

"... access to regular off-farm income opportunities tends to accentuate rather than mitigate inequalities in land endowments through the operation of an active (and illegal) land market (which implies that customary restrictions on land sales have largely disappeared) where many land parcels are sold under distress conditions and purchased by people with regular non-agricultural incomes."

However, the effect described here appears to wane as non-farm labour markets develop and human capital supersedes land in driving entry into and returns from non-farm activities. For example, in situations of scale-neutral technological change (such as the green revolution in rice production), over time education takes the place of landholdings as the most important determinant of non-farm income for rural households, as has been the case in the Philippines.⁵²

POLICY ISSUES AND IMPLICATIONS

Macropolicies: necessary but not sufficient

Well-designed general macroeconomic policies are necessary, but not sufficient, for the development of RNF activities because they are needed to achieve an efficient use of resources throughout the economy. If universal economic benefits are to be generated through improved resource allocation, a combination of various policies is needed, including an improvement in the "macro context", a devaluation of the chronic overvaluation of many countries' currencies, liberalization of trade – also involving a reduction of tariff and non-tariff barriers – a reduction of fiscal deficits, the elimination or privatization of parastatals and cuts in subsidies.

The positive effect of these policies in terms of improved resource allocation should extend to the rural areas, particularly to the extent that they eliminate the urban bias frequently found in many developing countries' economic policies. The implication of this last aspect is an improvement in the terms of trade of tradable goods produced in rural areas, which is of particular significance for the agricultural sector but is also relevant to certain goods produced in the RNF sector. Thus, the RNF sector will benefit directly through the improved terms of trade for tradable goods produced within the sector, and indirectly through production, expenditure and investment linkage effects with the agricultural sector.

Macroeconomic reform alone, however, is not sufficient to spur RNF sector development. Two points should be raised in this regard:

- There is often significant ambiguity regarding the effects of reforms on rural areas, particularly in the short term. Indeed, while liberalization may improve the terms of trade and create opportunities for RNF activity, short-term effects can also include the removal of protection previously enjoyed by the RNF sector and the exposure of certain RNF subsectors to competition from urban-based enterprises and imports. Painful adjustment processes can be forced on the rural economy as a result.
- Depending on the situation, reforms may have a positive effect on the incentives open to rural enterprises and farms, but there are often considerable capacity constraints that limit response to these incentives or prevent their being allocated in an equitable way that includes the asset-poor.

Physical and social infrastructure and institutional reform

Investing in rural infrastructure raises RNF activity and farm productivity.

Rural areas are typically underequipped in terms of infrastructure. Infrastructure investment policies can strengthen linkages between the RNF sector and agriculture and thus create RNF multipliers from the growth of agriculture, as was the case in Taiwan Province of China, Costa Rica and southeastern Burkina Faso, for instance. It is very important to improve both hard infrastructure (e.g. roads, electrification) and soft infrastructure (e.g. banking systems, market information systems) as a means of reducing the transaction costs for business starts and subcontracting in rural areas, and of improving the productivity of RNF entrepreneurs.⁵³

Also in terms of education, rural areas are frequently at a disadvantage, and the importance of enhanced rural education for development of the RNF sector is incontrovertible. It was noted earlier that empirical studies reveal education to be a strong determinant of household participation and of the level of wage earned in RNF activities. However, it appears that more specific skills and training are necessary to promote RNF activities in today's environment of competitive, liberalized trade. An example from the non-farm sector is the need to train rural people in skills that allow them to participate in skilled labour markets.

Missing links between agricultural policy and RNF development

The significance of RNF income and employment illustrated in this review should not be taken to mean that RNF development represents an alternative to addressing agricultural development problems; nor should it detract from the importance of agricultural policy and research. On the contrary, in all but the worst agroclimatic zones, the RNF sector is usually closely connected to agriculture, and activities linked to agriculture are predominant forces in first-stage and second-stage RNF sector transformation. This implies that agriculture is often crucial to the success of RNF development strategies, and vice versa. Moreover, sector-specific policies in general, and agriculture policies in particular, tend to be severely neglected in the RNF development debate, which is why they are given special emphasis here.

The general goal of a sector-specific policy orientation should be to identify promising subsectors and then systematically address the constraints to incentives and capacity for development – ranging from the participation of small- and medium-scale farmers, small and medium-sized agro-industrial development and/or linkages with larger agro-industrial companies, and market development and consumer product acceptance. The specific goal should be to provide the incentives and capacity for rural households and RNF enterprises to overcome entry barriers, and to create "linkage friendly" agriculture and RNF activities.

Shifting crop and livestock research from a narrow sectoral to a broad intersectoral perspective

Agricultural research needs to consider the weight farmers attach to the returns on new farm technologies compared with the returns on household resource use off-farm.

As part of its technology design and product priority strategies, agricultural research may need to consider the weight attached by farmers to the returns to new farm technologies compared with the returns on household resource use off-farm. Following are two important points that emerged earlier concerning the implications of the RNF sector for evaluating policy and project alternatives:

- The preference shown by farm households for diversifying into non-farm activities means that, all things being equal, farmers may want to free labour from farming to enable income diversification off-farm. This point has implications for agricultural research which should not necessarily be searching exclusively for labour-using technologies, even in labour-abundant areas.
- One implication is that households might not want to adopt productivity and conservation measures if the payback is not higher or faster than alternatives off-farm: this changes the cost-benefit criteria to include non-farm activities in the alternatives to be considered. Farm households should not be expected to want immediately to adopt natural resource management

practices and conservation investments involving the use of labour and/or capital that could earn higher returns in other sectors.

PICTURE 15

A Gambian woman uses a grinding mill to prepare food for market

This labour-saving technology allows far greater productivity among rural communities than in the past.

Another important research implication resulting from the high non-farm share in farm household income and employment relates to the measurement of farm labour productivity. In the simplest labour productivity estimates, the denominator is the number of persons actively engaged in agriculture. Even if non-farm activity is seasonally biased towards the dry season, in most cases some non-farm activity occurs also in the rainy season. Non-farm activity constitutes time in the production season, which should be subtracted from the estimated time spent on agriculture. This will raise the estimate of agricultural productivity per caput, which also adjusts upwards the implicit wage paid for farm labour (farm income per effective workday). Farm management surveys naturally try to measure the actual number of hours dedicated to farm tasks, but these types of survey are costly to conduct.⁵⁴

It is also important for research and extension to put more emphasis on farm/non-farm linkages through agro-industry and agricultural diversification involving small-scale actors. This involves the possibility of developing agricultural technologies that are scale-neutral, and thus benefit small- as well as large-scale farmers, combined with agroprocessing technologies that can be handled by small- and medium-scale agro-industrial firms. Such technologies tend to maximize the rural employment impact of agricultural development to the extent that relatively small-scale concerns have a higher employment-output ratio. Smaller farms and agroprocessing firms will also have a greater tendency to use local farm implement repair services as well as local transport and commercial companies, and will invest profits locally – all leading to further ripple effects in the local economy. Poorer households that would benefit from this employment are also more likely to spend their earnings locally on products and services of RNF firms, leading to greater multipliers through these expenditure linkages. Whether larger agro-industrial companies or farms could generate similar multipliers would need to be assessed on a case-by-case basis and would depend on how labour-intensive they were as well as how much local spinoff activity they could produce.⁵⁵

To help the small players compete, agricultural research and extension should encompass agro-industrial research in its broadest sense, covering implement and input design and marketing; agroprocessing technologies and market strategies; post-harvest storage technologies and marketing; marketing and distribution research; and consumer preference and responsiveness testing (including probing for new market niches). This requires collaboration between local universities, chambers of commerce, farmers' organizations and governments.

Adding a multisectoral perspective to agricultural and rural development policies

A central theme of this review has been the major entry barriers and constraints to competitiveness facing the poor in RNF activity. Difficulties may exist even in countries with a good infrastructure, relatively high rates of education and a favourable macroeconomic policy climate. Schejtman⁵⁶ points out that, even in Chile, only about 10 to 15 percent of small farmers are participating in the famous recent horticultural boom, and there are apparently relatively few small-scale agro-industrial companies connected with it.

With rising incomes in developing countries, in general potential alternatives for generating farm/non-farm linkages are in processed cereals, tubers and roots and pulses, processed and fresh fruits, vegetables and dairy and other livestock products. Some of these activities, such as those involving fruits, vegetables and dairy products, tend not to be characterized by economies of scale, and the agroprocessing of these products is especially amenable to small- and medium-scale operations.⁵⁷ There are a number of serious policy challenges in broadening the participation of rural households in farming and agro-industrial and related enterprises linked to the above products. Addressing these challenges means going beyond increased agricultural productivity to achieve a better coordinated rural policy. Institutional cooperation and coordination is a crucial element in such a policy.

RNF sector development has suffered because it has not belonged to the domain of either Agricultural or Industry Ministries.

RNF sector development has fallen into an "institutional vacuum", since it has not belonged to the domain of Agricultural Ministries, with their mandate related to farming per se, or to that of Industry Ministries, which commonly focus on large-scale, formal-sector companies. The present review, however, has shown that this vacuum may have excluded one-third of the rural economy from the policy debate and related action. Hence, it is very important for policy-makers to establish a system perspective that links the agricultural and RNF sectoral domains. This is not an argument for a simple return to integrated rural development, but rather a call for close cooperation in policy and programme formulation and implementation between Agriculture and other (Industry, Technology, Commerce, etc.) Ministries with respect to the promotion of development in the RNF sector.

To increase the reach of the employment spillover effects of agro-industrialization in rural areas, more small- and medium-scale farmers need to be involved as producers as well. Yet, at present, this participation is limited by constraints on access to inputs, especially after the full or partial dismantling of public input distribution systems. In many countries to date, private sector activity in the areas of input supply and credit has not emerged sufficiently to fill the gap left by government's withdrawal.⁵⁸ Farmers are often forced to rely on own-cash sources from off-farm employment and cash cropping to pay for inputs and substitute for credit. There are some striking illustrations of the effect of these changes on farmer participation in agro-industrial contracts (e.g. that of Zamora, Mexico, where many smallholders had to withdraw from strawberry production for the local packing plants⁵⁹), although this situation does not always call

for policy action. Often, farmers' need for credit and inputs becomes the driving force for a variety of contractual arrangements with agro-industrial companies, including provision by the latter of inputs and credit for farmers.

One of the most difficult policy challenges will be to facilitate coordination between farms and companies so that scale economies can be created and exploited. That is, agro-industrial firms and spinoff businesses will be reluctant to invest in the critical mass of capacity (to minimum optimal scale) unless they can be reasonably sure that farmers will be forthcoming with sufficient produce of the appropriate (input) type and quality. Similarly, farmers will be reluctant to shift towards the new crops and make the necessary capital and skill investments in the absence of a profitable market among agroprocessors and distributors. The policy solution involves coordination among various institutions of the public and private sectors. The role of the public sector is crucial in facilitating communication, lowering transaction costs and providing technical knowledge that could lead to mutually advantageous solutions generating the requisite investment in both sectors. This would involve legal reforms to sanction contracts, technical training and market information and business-linkage information systems.

Knowing and being able to respect international grades and standards often gives larger urban-based businesses an advantage over local companies, particularly in export markets. Indeed, as well as reducing transaction costs, the establishment of grades and standards can also lead to industrial concentration when smaller players lack access to the means to implement and monitor those standards. Accordingly, an important measure to increase the "linkage friendliness" of farming and to enable small- to medium-scale agro-industrial firms to compete is the creation and wide dissemination of information on grades and standards.

Enabling the poor to participate

Improving the asset base of the poor is crucial. This review has shown that poor farm households often lack the assets (such as liquefiable assets, education, access to credit and security of land use rights) that serve as important capacity variables for participating in RNF activities. In turn, unequal access to more remunerative RNF employment may cause a further concentration of wealth (in the form of land): there is evidence of this, for example, in western Kenya and Rwanda. A similar vicious cycle may occur with other farm assets.

Income growth among the rural poor is a crucial engine for rural growth via production and expenditure linkages.

In some countries where land is very unequally distributed, the lack of landholding among the poor may constitute a constraint to the growth of RNF activity and employment. Income growth among the rural poor is a crucial engine for rural growth via production and expenditure linkages. On the other hand, increases in the income of wealthier population groups (in this case large landholders) may be associated with leakages to the urban and foreign sectors. For example, Saith⁶⁰ showed that land reform was critical to the broad-based rural industrialization in Taiwan Province of China and in mainland China. He notes that this created a broad rural middle

class, rising incomes, collateral for loans and demand for outputs and inputs from local agro-industry.

The most far-reaching, but also the most difficult, policy to implement would be land redistribution. Short of that, non-land asset distribution, would still be useful for RNF employment creation and improving access by the poor to RNF activities in the medium term. Prime examples would be the broadening of education and specific training and improved credit access for RNF business starts, such as those undertaken in North Arcot, India, to help the poor start small agro-industrial firms in the context of the green revolution.

Competition between small-to medium-scale RNF firms and large-scale firms

An important issue is whether "the lion can lie down with the lamb". In other words, is a significant increase in RNF activity by small- and medium-sized companies possible in situations where there are large-scale firms competing in the same markets? Trade and foreign investment liberalization and improvement of infrastructure can constitute a threat to small- to medium-sized RNF enterprises. Namely, reductions in economic and "natural" protection of rural companies may create pressures on their competitiveness vis-à-vis consumer goods and inputs "imported" from metropolitan areas and/or from abroad. This can be seen in Chile, Mexico, the Philippines and South Africa, or in the context of a dual economy where large retail outlets and large manufacturing companies compete in rural towns and intermediate cities with small- and medium-scale rural enterprises. In globalizing or regionalizing markets, this competition can only become more intense. In such cases, even where small rural firms have the production cost advantage, this will not necessarily translate into a market advantage, as larger urban firms may have better distribution networks, brandname appeal and so on.

The potential competition between small informal sector businesses and large formal sector businesses could take place in terms of production costs, captured markets for farm inputs and processed foods, and distribution channels. The issue is whether the small business sector can face up to the competition with lower costs and prices; more appropriate products in the form of inputs and consumption goods targeted to small-scale farmers and poor rural households; more convenient access to products and services; and niche market strategies. Such competition can, of course, turn out to the benefit of the rural consumer and farmer in terms of lower costs and access to products and services suitable to them.

Links between small rural companies and larger urban enterprises can be promoted through arrangements that are based on their mutual interest.

In a liberal economic policy environment that avoids distorting incentives, and within the political and fiscal constraints faced by governments, the challenge is to help smaller companies identify niche markets and exploit their competitive advantages, promoting various arrangements based on the mutual interest of the small rural companies and larger enterprises or markets.

The most "traditional" arrangement, and what appears to be the conventional image that policy-makers have, is that of a large urban company setting up a factory and hiring local workers, such as in the textile industry in the first half of the 1900s – the foundation stone of Japanese industrialization – or the agro-industrial complexes of northern Mexico or central Chile. Frequently, national or local governments have actively supported such arrangements with tax breaks and installation of infrastructure including electrification and public buses. It has been observed that some employees move on to form their own small companies and use the skills learned from formal sector employment.

A promising type of arrangement, however, is the "business linkage" between big urban companies and small rural businesses in contracted outsourcing and franchising. This is developing rapidly in East Asia and, to a certain degree, in Latin America and a few parts of Africa, such as South Africa and Zimbabwe. Under such arrangements, a small company can serve to enter a niche market for which it is particularly suited and/or to lower labour costs and increase the flexibility of labour arrangements. As labour costs and skills grow in the initial set of companies, there can be a second wave of outsourcing relationships where rural companies subcontract to other rural companies. Infrastructure development that lowers costs constitutes a key ingredient in the success of these arrangements.

This type of subcontracting arrangement appears to have a number of strong advantages, as it teaches skills to small firms, creates access to dynamic markets, in some cases provides credit, etc. The buyer sometimes provides capital to suppliers by providing an advance payment for an order or by supplying raw materials for processing. Business links can help suppliers reduce their capital needs as well as cutting down on search and start-up times by targeting production to an identified market. A small company can also receive marketing advice from a larger partner. An example could be a rural entrepreneur forming a small business to distribute farm inputs or collect and perform the first processing stage of farm outputs on behalf of a large business. This arrangement could be a "strategic alliance" of agro-industrial companies and small-scale farms, or a franchise or outgrower/outsourcing arrangement. Another example could be a franchise arrangement between a big fertilizer company and small mixing stations in rural areas. However, the subcontracting option has the best chance of success where there is a dynamic industrial sector in the urban areas, widespread rural education and good infrastructure and communications.

CONCLUSIONS

The RNF sector is already of great importance to rural economies for its productive and employment effects: it offers services and products upstream and downstream from agriculture in the off-farm components of the food and fibre system, which are critical to the dynamism of agriculture; while the income it provides farm households represents a substantial and growing share of rural incomes, including those of the rural poor. These sectoral contributions will become increasingly significant for food security, poverty alleviation and farm sector competitiveness and productivity in the years to come.

Equitable development of the RNF sector will not be smooth or automatic.

Equitable development of the RNF sector will not be smooth or automatic, however. The conclusion of this review comprises a set of two paradoxes, presented with concomitant policy conclusions and challenges, and a final cautioning about the adjustment costs involved in adapting the RNF sector to open, integrated markets resulting from structural adjustment and liberalization.

First is the "interhousehold paradox", arising from the fact that the poorest households, while facing the greatest need for remunerative RNF employment (because of risk management and the need to cope with income shocks or farm-level limitations), are also the most constrained owing to a lack of key assets (education, skills, startup capital) and opportunities (determined by distance from and access to RNF labour and product markets). Conversely, wealthier households have less "need", but at the same time enjoy a greater capacity to participate in the RNF sector, particularly in its most remunerative activities. The degree and nature of their participation is thus based mainly on considerations of relative returns and profit opportunities. This paradox underlines the inequality in access to RNF employment and draws attention to the entry barriers faced by the poor.

The main conclusion to be drawn is the importance of helping the poor to overcome the constraints and thus enable them to participate in RNF activities. This entails diagnosing the kinds of asset poverty constraining the poor with respect to entrance into the more dynamic and remunerative RNF activities, and using policies and programmes to address those asset constraints. In turn, this will often require investments in general education and specific skill building for RNF activities (such as agroprocessing technologies) and in market and technology information centres in rural areas for the purpose of identifying promising opportunities. It will also mean promoting RNF employment and strengthening agricultural linkages in areas poorly served by infrastructure. This involves public investments aimed at allowing the poorer hinterlands to benefit from and participate in the growth.

The second paradox is the "interzone paradox", arising from the fact that the zones or locations with poor agricultural potential (and frequently poor infrastructure) are the ones that have the greatest need for remunerative RNF employment (to offset a poor farm sector) but are the most constrained by a lack of assets for RNF market development (such as good roads, a skilled workforce and economical sources of raw materials). Another aspect of this paradox is that a lack of buying power limits a zone's potential for RNF sector development. The two constraints are linked, since poverty caused by a weak and stagnant farm sector constrains RNF sector development from both the supply and the demand sides. By contrast, more favourable zones that have less "need" for RNF employment (in the sense that the average household has been able to rise from poverty through farming and/or farm wage labour) still have a greater capacity to generate RNF activities, just as there tend to be better-paying RNF jobs in these zones compared with the resource-poor zones. It is indeed most frequently on the basis of RNF "linkage activities" upstream or downstream from the farm, either through production linkages or based on growing farm incomes through consumption linkages, that RNF sector growth and transformations are originally induced.

The main challenge linked to this second paradox is the promotion of private investment in resource-poor zones through well targeted initial public investment. These zones are frequently "written off" on the reasoning that growth of urban economies will simply absorb outmigration from the poor zones, which will consequently depopulate, and that it is therefore a waste of resources to invest in them. However, the congestion of large cities and the secular tendency towards increasing capital/labour ratios in urban economies have shown the limits to migration to cities. Investing in new RNF sector opportunities in resource-poor zones is crucial. Such investments will need to be in the general skill and infrastructure development necessary to establish commerce and small- to medium-scale manufacturing.

A final cautioning is necessary regarding the effects of "opening up" rural areas. Introducing policies aimed at increasing opportunities for the development of RNF activities can also be facilitated by structural adjustment and market liberalization because of the opening and development of internal and external markets and the reduction of the anti-rural bias frequent in developing countries' economic policies. These effects, which are strengthened by the development of infrastructure that bring rural and urban (and even international) markets closer together, in principle imply more opportunities for poverty-alleviating RNF development. However, they may at the same time involve short-term risks and adjustment costs. Indeed, the openness that creates the opportunities also deprotects rural areas and brings larger fish into the backwaters of the RNF economy: large retail stores and big farm input suppliers that set up branches in rural towns, big agroprocessors moving into farm areas, etc. This can expose certain RNF subsectors and activities to new competition and force painful adjustments on the RNF sector.

PICTURE 16

[Basket weaving as a cottage industry](#)

Rural women often work in their homes to produce marketable goods.

Policy-makers are challenged to design policies and investments that help local economies to adjust and take advantage of the new situation, rather than putting up roadblocks to location of large- and medium-scale agro-industrial or retail firms in rural areas, which would only serve to maintain the marginalization of those zones from external and urban markets. An important key to success lies in helping the poor to participate, through RNF enterprise starts, contract farming and wage employment. Again, production sector policies will play a key role in spurring equitable RNF sector development – which is frequently a missing part in the policy debate. Also important for facilitating such participation are institutional and infrastructure development policies that level the playing field for smaller companies, reduce transaction costs for those in the hinterlands and raise the skills of the poor.