

## DO MIGRANT REMITTANCES AFFECT THE CONSUMPTION PATTERNS OF ALBANIAN HOUSEHOLDS?

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### Abstract

This paper investigates the extent to which consumption patterns of Albanian households are affected by the receipt of migrant remittances. Domestic and international remittances are considered and differences in their impacts on household consumption patterns assessed. The study finds that the consumption pattern for households in receipt of internal remittances is not statistically different from those that do not receive such transfers. On the other hand, households who receive remittances from abroad spend, on average and *ceteris paribus*, a lower share of their expenditure on food and a higher share on consumer durables compared to households who do not receive any type of migrant remittances. However, in terms of the impact of remittances on marginal spending behaviour, even international remittances do not seem to play a substantial role, in contrast to the evidence reported in other recent studies in this area of research. This may be due to the fact that the remittance variable that we use is failing to capture all households who are receiving remittances, or may reflect that in Albania both domestic and international remittances only have a modest effect on consumption patterns of households.

**JEL Classification:** D12

**Keywords:** Migrant Remittances, Household Consumption, Engel Curves

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## Introduction

Albania, one of the poorest countries in Europe, has witnessed large migratory flows both internally and externally following the fall of the communist regime in the early 1990s. By the end of the decade over one-fifth of the Albanian population were estimated to be living abroad (see UNECE, 2003). Consequently, remittances sent from Albanian migrants to their origin households were at record levels in the last decade. The Bank of Albania reports that Albanian emigrants' remittances reached \$1,028 million in 2004, which is about 13.5 per cent of official GDP (see Bank of Albania, 2005).

It is generally recognised that migrant transfers constitute an important source of income for Albanian households and their role as a source of foreign exchange for the country is acknowledged (see, for example, de Zwager *et al.*, 2005). The potential development impact of these remittance flows has attracted the attention of the Albanian government, international agencies and NGOs, who are actively engaged in designing policies for the better management of remittances in order to maximise the benefits for the Albanian people and the country as a whole.

Despite an increased interest in the role of remittances in Albania, relatively little is known about the micro-level impact of remittances in the origin country. The related question of how remittances affect the spending behaviour of Albanian households has not, heretofore, been analysed using the approach adopted in the current paper. Moreover, existing studies generally use small-scale and potentially unrepresentative survey data or qualitative methods to examine these issues.

Nevertheless, it is often asserted that migrant remittances in Albania are not being used 'productively' and are thus not beneficial for development. Although we are unable to fully cover the complex question of whether or not Albanian households are using these transfers productively, this paper constitutes, to our knowledge, the first attempt to study the impact of remittances on household expenditure behaviour in Albania using what we believe to be an appropriate tool of analysis. Moreover, our results are based on data drawn from the nationally representative Albania Living Standards Measurement Survey (ALSMS) 2002.

The approach we adopt is situated within an Engel curve framework, traditionally used to model consumer behaviour (see Deaton and Muellbauer, 1980). The use of Engel curves has proved useful for the evaluation of tax/benefit policy reforms (Blow *et al.*, 2006, Brännlund and Nordström, 2001) and of food poverty reduction policies in developing countries (Kedir and Girma, 2003, Bhaumik and Nugent, 1999). In recent years, a number of researchers have used this approach to analyse the impact of migrant remittances on household expenditure behaviour in several developing countries. These include Maitra and Ray (2003), Zarate-Hoyos (2004), Adams (2005) and Taylor and Mora (2006). However, none of the existing studies considers the case of Albania.

The Engel curve approach allows us to address a number of research questions. The first relates to whether households receiving migrant remittances spend a higher share of their income on non-food commodities than households not in receipt of such remittances. This type of behaviour may be taken, in certain circumstances, to potentially reflect investments that may ultimately enhance local economic development. A second equally important question focuses on the impact that remittances received from abroad exert on household expenditure behaviour relative to those received from domestic sources. It should be stressed that, unlike the above-mentioned studies, the focus of this work is on household expenditure on consumer goods, thus the analysis excludes spending on human capital assets like education and health, or on housing, all of which are considered investment goods by some researchers in the field (see, e.g., Taylor and Mora, 2006).

The structure of the paper is as follows: section 2 contains, *inter alia*, some background on the Albanian migration experience and remittances, which motivates our analysis and reviews the existing literature in this area; section 3 describes the data and defines the key variables used in the analysis; section 4 outlines the econometric model and the estimation procedure; section 5 presents the empirical findings; and section 6 concludes.

## Background

The collapse of the central planning system in both European countries and those of the former Soviet Union provided citizens of post-communist countries with greater opportunities to migrate abroad. However, the mass exodus anticipated (see Layard *et al.*, 1992) did not materialise and the extent of the actual East-West migratory flows of the period was smaller than originally expected. Albania has been one of the few exceptions to this general pattern. By the end of the decade over one-fifth of the Albanian population (around 600,000-700,000 Albanians) were estimated to be living abroad, which, according to UNECE (2003), represents one of the largest outflows relative to population of any post-communist economy. A combination of the long repressed desire to move outside the borders and the exacerbation of economic problems that characterised the latter years of communist rule triggered the mass-exodus of Albanians in the early 1990s.

More recently, Albania has registered a strong economic performance with steady economic growth, reduction in the unemployment rate and a more stable inflationary environment. However, the level of poverty remains high and per capita income is one of the lowest of all the transitional countries. Using an absolute poverty line of 4,891 Leks per capita per month,<sup>1</sup> the World Bank found that over one-quarter of

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1. This poverty line has been estimated from the expenditure data of the 2002 ALSMS. The equivalent amount in US dollars is about \$35 per capita per month (2002 exchange rate 140 Leks=\$1).

the population, approximately 790,000 individuals, were classified as poor in 2002 (see World Bank, 2003). Migration has provided an important coping strategy for economic survival in Albania. Several studies have profiled the characteristics of Albanian international migrants. These are the young, disproportionately male and the better educated, and their preferred destinations are Greece and Italy (see, e.g., Kule *et al.*, 2002, Carletto *et al.*, 2004, and Castaldo *et al.*, 2007).

A high degree of internal migration has also taken place in Albania in the 1990s. These internal migratory movements are mainly from rural to urban areas and from the mountainous north-eastern areas to districts of the coast and Tirana, which is by far the primary recipient of domestic migrants (see Carletto *et al.*, 2004). Zezza *et al.* (2005) find that while Albanian internal migration is positively related to poverty, this is negatively related to international migration. External migration appears to originate predominantly in the richer districts of the centre and the south of Albania.

In conjunction with the new migration of the past fifteen years, migrant remittances, broadly defined as cash or in-kind transfers from migrants to relatives and friends in their country of origin, have become a crucial element in the modern socio-economic life of Albania (see Carletto *et al.*, 2004, King and Vullnetari, 2003, and Uruçi and Gedeshi, 2003). The latest official estimates reported by the Bank of Albania reveal that Albanian emigrants' remittances have steadily increased since 1999, reaching \$1,028 million in 2004, twice the size of the foreign exchange revenues from exports, and comprising about 13.5 per cent of official GDP (see Bank of Albania, 2005). The work of de Zwager *et al.* (2005) emphasises the possibility that the country's inflow of remittances will diminish when emigration reaches a mature phase.

The World Bank poverty assessment for Albania conducted in 2003 found that households receiving remittances are characterised by lower poverty incidence, though cause and effect here is clearly difficult to disentangle. However, the association between remittances and poverty can be less pronounced when using asset-based measures of well-being and when looking at specific regions in the country, as shown by Arrehag *et al.* (2005) in the context of the Korçë district.

As for the impact of migrant remittances on household expenditure patterns in Albania and the issue of whether or not these transfers are being used productively, the evidence heretofore has been ambiguous and opinions diverge. The existing studies show that the main use of emigrant remittances in Albania is to purchase food and basic necessities. Figures vary in relation to the second and third use of remittances, which range from investment in building or house repairs to the purchase of durable goods and medical expenses (see Nicholson, 2001, Gedeshi *et al.*, 2003, World Bank, 2003, and Arrehag *et al.*, 2005). Gedeshi *et al.* (2003) emphasise that while remittances constitute an important means of poverty reduction for households, they can create a culture of dependency.

However, Arrehag *et al.* (2005), using data collected in the Korçë district, find that although the main use of remittances is for daily needs and housing, migrant transfers are also used in urban areas for investment in schooling and in rural areas to reduce debt, or increase savings and investment. Moreover, Kule *et al.* (2002) provide survey-based evidence of the investment of remittances in productive businesses, while qualitative studies report several examples of micro-entrepreneurship financed through remittances in Albania (see, e.g., Nicholson, 2001).

It should be stressed that the above-mentioned studies are based on anecdotal evidence, small-scale surveys or large-scale ones that are not nationally representative (except for the case of World Bank, 2003). Moreover, among them, the quantitative studies adopt a direct approach based on the use of household survey questions which inquire on what remittances are spent. However, it is acknowledged that using this method to draw inferences about the productive use of remittances offers only a partial answer, it can generate misconceptions and sometimes lead to incorrect conclusions (see, e.g., Zarate-Hoyos, 2004, Adams, 2005, and Taylor and Mora, 2006). In the case of Albania, in particular, Arrehag *et al.* (2005) found that when respondents were asked what was the main use of remittances, a larger proportion answered 'clothing and food', compared to when they were asked what the remittances had enabled them to buy, indicating that people do not always use the transfer in the way in which they claim they intend to.

The debate on the role of remittances hinges on three main observations. First, that although remittances might not be explicitly invested in productive businesses, they can be spent on investment-type goods (e.g., health, education, housing or other durables). Second, that remittances, as every other source of income, are fungible, thus even if they are not directly spent on investment in business and/or in human capital, they may free other resources for spending on such investments. Third, that increased spending on consumer goods may be beneficial for local development in some contexts, as increased demand for these goods may create incentives for the establishment of new retail businesses (unless the goods are imported) and consequently may generate new local employment opportunities. In the case of Albania, for example, the increased investment in housing over recent years, often financed through migrant remittances, is believed to have played a major role in maintaining the building sector as one of the leading industries in the country (see Nicholson, 2001). Thus, the issue of whether or not remittances are used productively in a migrant's country of origin is complex and cannot be easily answered given the absence from conventional surveys of detailed questions on how remittances are actually used by households.

An alternative approach, which is becoming increasingly popular in the area of remittances and household expenditure behaviour, is to estimate a set of budget share equations for the different components of the consumption aggregate, and insert a

remittance or a migration variable as a regressor in each equation. This approach has the advantage of overcoming the problem of the fungibility of remittances, as well as allowing a simultaneous analysis of the effect of these transfers on expenditure on different types of goods. However, it has the disadvantage that it requires detailed information on the consumption aggregate and all its components, which are not as readily available as data collected on the basis of direct questions on the use of remittances. Recent studies that adopt this methodology include Maitra and Ray (2003) in the context of South Africa, Zarate-Hoyos (2004) and Taylor and Mora (2006) for the case of Mexico, and Adams (2005) in the context of Guatemala.

## Data

The 2002 Albania Living Standards Measurement Survey (ALSMS) was undertaken by the Albanian National Institute of Statistics (INSTAT) with the technical assistance of the World Bank. The ALSMS 2002 constitutes the first round of a five-year project designed to undertake poverty assessments for Albania (see World Bank, 2003). The survey contains a wide range of information on several aspects related to the living conditions of the people of Albania and acquired data at the individual, household and community level. It also contains detailed information about the household expenditure on several types of commodities, as well as a module on the private transfers received by households including migrant remittances.

The sampling frame for the ALSMS was based on a stratified two-stage cluster design and includes 3,599 households and 16,521 individuals. The country was first divided into four regions (strata), Tirana, Coastal, Central and Mountain. Subsequently, 450 primary sampling units (clusters) were selected, 125 in the Coastal, Central and Mountain areas, and 75 in Tirana. Finally, eight households in each of the clusters were chosen. The primary sampling units were selected from the 2001 pre-census list of census enumeration areas. The sample is representative at national level, as well as at regional and at the urban/rural level.

As the focus of the present research is on the impact of remittances on household consumption behaviour, the unit of interest is the household. We focus on households whose heads are not of pensionable age. Once missing observations on a variety of variables are excluded, the number of usable observations for our analysis is 2,931 household-level data points.<sup>2</sup> The key dependent variables of interest for the empirical analysis are the budget shares for four broad categories of expenditure items defined as food, non-food, durables and utilities. These categories constitute almost

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2. The analysis was also conducted using a broader age categorisation for the head of household but no material difference was found in the results for the key variables of interest in this paper. Thus we use the sample restricted to those within the narrower age category.

98% of the consumption aggregate that has been constructed by the World Bank and used as the main welfare indicator for the poverty assessment of Albania.<sup>3</sup>

The spending on food was collected by means of a 14-day diary, and includes daily purchased products, non-purchased products (own-produced and received as a gift), food eaten outside the home and items purchased before the reference period. The non-food expenses include a large array of products and services, ranging from household cleaning and personal care, transport and internet costs, postal and bank services, entertainment, holiday and hobbies, clothing, home improvements, payment for professional part-time courses, insurance, other taxes (vehicle, TV, etc.) and costs for ceremonies. Durable goods include items such as domestic appliances, TVs, computers and vehicles (including trucks and tractors). However, it is not the purchase of these items that is considered as the source of expenditure for this category, but an estimated monetary value measuring the benefit that the household received from using the relevant goods. The utilities category includes monthly expenses that the household incurred for the consumption of electricity, gas, telephone services (e.g., landline, mobile, public phone), water and fuels (e.g., firewood, coal, kerosene, diesel). The expenditure categories that we use for the analysis are described in Table 1.

Unlike previous studies that address a similar research question, housing (rent and purchase), health and education are omitted from our analysis. As far as housing and health are concerned, they were excluded from the construction of the consumption aggregate that was utilised to undertake the poverty assessment (World Bank, 2003). The main problem with the housing measure was the absence of a rental market in the country, which made it difficult to estimate the value of a dwelling.<sup>4</sup> Health was omitted because of the high percentage of people in Albania receiving subsidies for medicines and the difficulty in identifying those who actually received the subsidy and its size. Although alternative measures of expenditure on housing and health were provided in the ALSMS data, we do not adopt these in this study, since we were uncertain about the reliability of the corresponding variables.<sup>5</sup> On the other hand, although there is information on education expenditures within the consumption aggregate, this is not the subject of separate investigation here given that modelling the budget share for this heavily censored category requires econometric techniques that go beyond the scope of the current work.

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3. Full details on the construction of the consumption aggregate in the ALSMS 2002 can be found in the document "Construction of the Consumption Aggregate and Estimation of the Poverty Line" available at [www.worldbank.org/lsm](http://www.worldbank.org/lsm).

4. In the ALSMS sample 98 per cent of the households were found to own the dwelling in which they resided.

5. In light of the major role that Albanian emigrants' remittances play in financing investment in housing, as is shown in previous research, we acknowledge that the exclusion of housing from the analysis may be seen as a serious limitation of the present work.



**Table 1.** Description of the expenditure categories used in the analysis

Category	Category Description
Food	Purchased products Non-purchased products (own-produced and received as a gift) Food eaten outside home Items purchased before the reference period
Non-food	Clothing and personal care House cleaning Home improvements Transport Entertainment and hobbies Other products and services
Durables	Domestic appliances TV, computer, video and DVD player Vehicles (bicycle, motorcycle, car, truck, tractor)
Utilities	Electricity, gas and water Telephone (landline, mobile, public phone) Fuels for home use (firewood, coal, kerosene, diesel)

A set of other variables was constructed for the head of household and these include age, gender, religion, highest level of education attained, and employment status. A measure for household size was also constructed from the data. A set of regional and settlement type controls (i.e., for residing in either urban or rural areas) are also included. Finally, a set of binary variables indicating whether or not the household receives specific sources of private and social transfers is also used. An investigation of the role played by this latter set of variables provides the particular focus for this research, since it includes indicators of the remittance status of the household (i.e., whether or not the household receives remittances from within Albania or from sources abroad).

Remittances are defined as money received by Albanian households in the past 12 months prior to the survey in the form of cash or in-kind from someone who did not live in the household (e.g., child or other relative in Albania or abroad). For complete-



ness, controls that capture whether or not transfers were received from institutions (e.g., NGOs, churches, mosques, etc.), and through social assistance schemes (e.g., economic assistance, pensions, benefits, etc.) are also included in our preferred specifications. Given a concern that monetary values for remittances may be subject to measurement error, we use a binary measure for whether or not a household received remittances. A similar approach is used by Zarate-Hoyos (2004) and Adams (2005).

Table 2 describes the variables used in the analysis and table 3 provides selected summary statistics on the basis of our sample of 2,931 households. However, it should be noted that for the durables and utilities categories only 2,901 and 2,930 households are respectively available for analysis as the sample is restricted to the households that consume positive amounts of goods in these categories. Table 3 shows that among our sample of 2,931 households, about 78% do not receive any source of remittances from migrants, about 17% receive only external remittances, 3.3% only internal remittances and 1.6% both. Note that the relatively low proportion of remittance receiving households may be due to a limitation of the remittance variable in the ALSMS data, which may not be fully capturing households who are receiving transfers from seasonal migrants. In fact, these types of migrants may be contributing to household income through their earnings from migration, but not identified as sources of remittance because probably they are still considered as members of the household and thus excluded on the basis of the remittance definition outlined above. This data limitation warrants caution in the interpretation of the empirical results, especially in relation to the effect of internal remittances, since seasonal migration may be more likely to occur among domestic movers.

**Table 2.** Description of the variables used in the analysis

Variable	Variable Description
Budget Share of Food	The ratio of the total expenditure on food to the total expenditure of the household
Budget Share of Non-Food	The ratio of the total expenditure on non-food to the total expenditure of the household
Budget Share of Durables	The ratio of the total expenditure on durable goods to the total expenditure of the household
Budget Share of Utilities	The ratio of the total expenditure on utilities to the total expenditure of the household
Log of Total Household Expenditure	The logarithm of the total (monthly) expenditure of the household
Household Size	The total number of individuals in the household
Age (years)	The age of the head of the household in years
Male	=1 if the head of the household is male; = 0 otherwise
Muslim	=1 if the head of the household is Muslim; =0 otherwise
Orthodox	=1 if the head of the household is Orthodox; =0 otherwise
Catholic	=1 if the head of the household is Catholic; =0 otherwise
Other religion	=1 if the head of the household is of another religion; =0 otherwise
Health Disability	=1 if the head of the household has a health disability; = 0 otherwise
Employee	=1 if the head of the household is an employee; = 0 otherwise
Farmer	=1 if the head of the household is a farmer; = 0 otherwise
Self-Employed	=1 if the head of the household is self-employed; = 0 otherwise
Unemployed	=1 if the head of the household is unemployed or a temporary layoff; = 0 otherwise
Inactive	=1 if the head of the household is inactive; = 0 otherwise
Primary: $\leq 4$ grades	=1 if the head of the household has no education or achieved four or less primary grades; = 0 otherwise

Primary: 5 to 8 grades	=1 if the head of the household achieved between five and eight primary grades; = 0 otherwise
Secondary	=1 if the head of the household achieved secondary level; = 0 otherwise
Vocational	=1 if the head of the household achieved vocational level; = 0 otherwise
University	=1 if the head of the household achieved university level; = 0 otherwise
Residence Dwelling Area: $\leq 69$ Sq. Metres	=1 if the area of the dwelling is less than 69 square metres; = 0 otherwise
Residence Dwelling Area: $70 \leq$ Sq. Metres $\leq 130$	=1 if the area of the dwelling is between 70 and 130 square metres; = 0 otherwise
Residence Dwelling Area: Sq. Metres $> 130$	=1 if the area of the dwelling is over 130 square metres; = 0 otherwise
Residence Constructed after 1990	=1 if the dwelling was built after 1990; = 0 otherwise
Tirana	=1 if the household resides in Tirana; = 0 otherwise
Central Region	=1 if the household resides in the Central region; = 0 otherwise
Coastal Region	=1 if the household resides in the Coastal region; = 0 otherwise
Mountain Region	=1 if the household resides in the Mountain region; = 0 otherwise
Urban Settlement Type	=1 if the household lives in an urban settlement; = 0 otherwise
Transfers from Institutions	=1 if the household receives transfers from institutions; =0 otherwise
Social Assistance	=1 if the household receives social transfers; =0 otherwise
No Remittances	=1 if the households receives no remittances; =0 otherwise
Internal Remittances Only	=1 if the household receives internal remittances only; =0 otherwise
External Remittances Only	=1 if the household receives remittances from outside Albania only; =0 otherwise
Internal & External remittances	=1 if the household receives remittances from within and outside Albania; =0 otherwise

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**Table 3.** Summary statistics of the variables used in the analysis

Variable	Mean
Budget Share of Food	0.629 (0.128)
Budget Share of Non-Food	0.201 (0.110)
Budget Share of Durables	0.013 (0.014)
Budget Share of Utilities	0.131 (0.063)
Log of Total Household Expenditure	10.33 (0.460)
Household Size	4.398 (1.659)
Age (years)	46.10 (10.39)
Male	0.901
Muslim	0.805
Orthodox	0.095
Catholic	0.067
Other religion	0.033
Health Disability	0.222
Employee	0.359
Farmer	0.249
Self-Employed	0.101
Unemployed	0.086
Inactive	0.205
Primary: $\leq 4$ grades	0.095
Primary: 5 to 8 grades	0.405
Secondary	0.160
Vocational	0.214
University	0.126
Residence Dwelling Area: $\leq 69$ Sq. Metres	0.536
Residence Dwelling Area: $70 \leq$ Sq. Metres $\leq 130$	0.432
Residence Dwelling Area: Sq. Metres $> 130$	0.033
Residence Constructed after 1990	0.244
Tirana	0.162
Central Region	0.279
Coastal Region	0.273
Mountain Region	0.286
Urban Settlement Type	0.549
Transfers from Institutions	0.012
Social Assistance	0.496
No Remittances	0.778
Internal Remittances Only	0.033
External Remittances Only	0.173
Internal and External Remittances	0.016

*Notes:*

(1) No. of Observations: 2931.

(2) Standard deviation in parentheses (for continuous variables only).

## Methodology

An Engel curve relates the household budget shares allocated to specific types of goods to total household expenditure. It provides, among other things, a framework to test ‘Engel’s law’ that poorer households devote a higher share of total expenditure to food. Since the early introduction of the model in empirical work, several functional forms have been proposed in the economics literature (see Deaton and Muellbauer, 1980). A popular form that is consistent with household utility-maximization is provided by the Working-Leser specification (Working, 1943, Leser, 1963), which relates budget shares linearly to the logarithm of total household expenditure. In its most austere form, this is expressed as:

$$w_{ij} = \alpha_j + \beta_j \ln(x_i) + \varepsilon_{ij} \quad (1)$$

where  $w_{ij}$  is the budget share of good  $j$  in household  $i$  (i.e., the ratio of expenditure on good  $j$  to total household expenditure),  $x_i$  is total household expenditure,  $\alpha_j$  and  $\beta_j$  are parameters to be estimated and  $\varepsilon_{ij}$  is an error term. An expression for the expenditure elasticity and the marginal budget share for good  $j$  can be derived from this equation (see appendix).

The basic Working-Leser model has been extended to include other variables assumed to affect the budget shares allocated to the different types of goods (see Deaton, 1997). In our application, controls for the different sources of migrant remittances are introduced. A general specification of the model for our particular purposes takes the form:

$$w_{ij} = \alpha_j + \beta_j \ln(x_i) + \mathbf{z}'_i \boldsymbol{\gamma}_j + \mathbf{D}'_i \boldsymbol{\theta}_j + v_{ij}, \quad i=1,2,\dots,n \quad (2)$$

where  $w_{ij}$  is the budget share of good  $j$  and household  $i$ ,  $x_i$  is total expenditure of household  $i$ ,  $\mathbf{z}_i$  is a vector of households and regional characteristics.<sup>6</sup> The  $\alpha_j$  and  $\beta_j$  are unknown parameters corresponding to the  $j^{\text{th}}$  commodity category and requiring estimation,  $\boldsymbol{\gamma}_j$  is an unknown parameter vector to be estimated and relates to household and other characteristics contained in the  $\mathbf{z}_i$  vector, and  $v_{ij}$  is an error term that captures the unknown variation in the  $j^{\text{th}}$  budget share for the  $i^{\text{th}}$  household and for which standard econometric assumptions are made.

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6. In the estimation of equation (2) we adjust the total expenditure of the household for regional price differences by means of the Paasche price index. The relevant variable for this index has been constructed by the World Bank research team and can be found in the total consumption data set (see the document “Construction of the consumption aggregate and estimation of the poverty line”, page 8).

The  $D_i$  vector contains a mutually exclusive set of binary variables capturing whether or not the household receives remittances from within Albania or abroad. This includes four mutually exclusive dummy variables: internal (i.e., domestic) remittances only, external (i.e., international) remittances only, internal and external remittances and no migrant remittances. This latter category provides the base group for the empirical analysis. The categorisation could be viewed as broad but a finer classification that defined the countries abroad from where the remittances were sent yielded too many mutually exclusive groups and problems with small cell sizes rapidly emerged.<sup>7</sup> The estimates for the  $\theta_j$  vector provide insights on the magnitude of the impact of different types of remittances on the relevant budget share.

The estimation technique used is the ordinary least squares (OLS) procedure. In the case of two of the categories used a small number of observations were censored at zero (see data section). In such circumstances it could be argued that a Tobit model provides a more appropriate procedure. However, the scale of censorship is modest in this case (just 1% of the sample) and we take the view that little material difference in estimates between OLS and a Tobit model is likely to occur in such circumstances. Thus, in the small number of cases where the observations are censored, these are omitted in estimation.

As noted above, Zarate-Hoyos (2004), Adams (2005) and Taylor and Mora (2006) provide recent studies that have employed a similar approach to ours. However, the former two cover the full set of expenditure categories, though it is not clear whether they estimate the budget share equations as a system or whether they deal with the censorship issue that arises for some of the categories.<sup>8</sup> On the other hand, Taylor and Mora (2006) provide a more comprehensive framework since they use a system estimator and at the same time they deal with the censorship problem of some of the categories. In addition, we do not deal with the endogeneity of the remittance variable, unlike Taylor and Mora (2006), who treat the migration decision as endogenous.

It could be argued that the assumption of log-linearity in the relationship between budget shares and household expenditure, which underlies our model, may not be appropriate in the context of Albania.<sup>9</sup> Thus as a further check we have re-estimated

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7. The same model specification provided in equation (2) is adopted by Taylor and Mora (2006), the only differences being that they use a migration rather than a remittance dummy and that they add interaction terms between the migration variable and  $\ln(x)$ . We also estimate a version of equation [2] with interaction terms for migrant remittances (see next section).

8. In the two papers we could find no reference to either the use of a system estimator or to the issue of the censorship.

9. As an anonymous referee pointed out, some studies (see, e.g., Arrehag *et al.*, 2006, for the context of Albania) suggest that the poor and the well-off display a low propensity to migrate, which may suggest the existence of an inverted-U relationship between poverty and migration, and thus remittances.

the four equations of budget shares using a quadratic version of model (2), where we add the square of the logarithm of total expenditure as an extra explanatory variable. The modified results confirm the presence of a quadratic effect of expenditure on the budget shares of food, non-food and durables, however, no substantial change was found in the estimates for the other explanatory variables, and in particular, for the remittance variables. Therefore, we retain the original specification of the model outlined above under (2).<sup>10</sup>

### Empirical results

A descriptive analysis of the raw data provides a prelude to our discussion of the econometric estimates based on expression (2). Table 4 reports the average budget shares for the four categories of commodities of interest (*viz.*, food, non-food, durables and utilities) by remittance status of the household. The table also shows the prob-values for z-tests of the null hypothesis of equal means in expenditure shares of remittance receiving and non-receiving households. The entries in this table reveal that households that receive only internal remittances spend two percentage points less on non-food items than those that are not in receipt of any form of remittances, though this result is only significant at the ten percent level. Households that receive only internal remittances spend two percentage points more on utilities than households with no remittances. On the other hand, households that receive only international remittances spend almost two percentage points less on food, nearly 0.5 of a percentage point more on durables, and almost three percentage points more on utilities than households that do not. Finally, the spending patterns of households in receipt of both internal and external remittances are not statistically significantly different from those that do not receive any source of remittances.

The above descriptive analysis suggests that there is an association between the receipt of remittances and the spending patterns of Albanian households across the selected commodities. The effect of external remittances is clearly more pronounced than the effect of internal remittances. In particular, external remittance receivers show a lower average budget share for food and a higher average budget share for durables and utilities, than non-remittance receivers. The small effect of the receipt of internal remittances might reflect the small cell size corresponding to the sub-sample of households that receive this particular form of remittances. In our sample of 2,931 households, 98 receive only internal remittances, 508 receive only external remittances, 46 receive both types of remittances and the remaining 2,279 receive no remittances at all. This rather small cell size merits some caution in interpreting the estimated effects for the variable of internal remittances in the econometric model.

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10. Note that none of the above-mentioned studies uses a quadratic form specification.



**Table 4.** Average budget shares by remittance status

	Food	Non food	Durables	Utilities
Internal remittances only	0.639	0.184	0.011	0.146
No remittances	0.632	0.204	0.012	0.126
<i>Prob-value</i>	<i>0.572</i>	<i>0.082</i>	<i>0.169</i>	<i>0.001</i>
External remittances only	0.617	0.195	0.016	0.150
No remittances	0.632	0.204	0.012	0.126
<i>Prob-value</i>	<i>0.024</i>	<i>0.116</i>	<i>0.000</i>	<i>0.000</i>
Internal and external remittances	0.633	0.196	0.014	0.136
No remittances	0.632	0.204	0.012	0.126
<i>Prob-value</i>	<i>0.923</i>	<i>0.662</i>	<i>0.397</i>	<i>0.281</i>

*Notes:*

(1) No. Observations: 2931 for food and non-food, 2901 for durables, 2930 for utilities.

(2) P-values show the level of significance at which we can reject the hypothesis of equal means between the sample proportion of remittance-receiver and non-receiver households.

We now turn to a discussion of the Engel curves estimates based on expression (2) for the four categories of commodities. The equation includes a variety of other controls that are not the subject of separate discussion here. Table 5 reports OLS estimates of the budget share equations for the four categories of interest. The estimated coefficients corresponding to the logarithm of total expenditure in the estimated budget share equations allow the computation of category specific expenditure elasticities and marginal budget shares, which are reported in Table 6.<sup>11</sup> The estimates for the expenditure elasticities suggest that food and utilities are necessary goods, while non-food and durables are classified as luxury commodities. The marginal budget share estimates reveal that for a one Lek increase in the household's budget, on average and *ceteris paribus*, expenditure on food commodities rises by 0.59 of a Lek, on non-food commodities by 0.29 of a Lek, on durable goods by 0.02 of a Lek, and on utilities by 0.08 of a Lek.

Attention now turns to the estimates concerning the effect of remittances on household consumption patterns. The estimated coefficient corresponding to the variable capturing the receipt of internal (or domestic) remittances is not statistically significant at a conventional level in any of the reported budget share equations. In contrast, the estimated effect for the receipt of international migrant remittances registers statistical significance for all categories other than the non-food item. The estimated coefficient for the receipt of external remittances suggests a reduction in the budget share allocated to food by 2.8 percentage points on average and *ceteris paribus*. The sample average budget share of expenditure on food is 0.629, thus the impact effect suggests that the budget shares of food are approximately 4.5% lower, *ceteris paribus*, for households in receipt of external remittances compared to those which receive no remittances at all. The receipt of external remittances, on the other hand, increases the share allocated to the durables category by 0.33 of one percentage point, on average and *ceteris paribus*. The average budget share of expenditure on durables in our sample is 0.013. The budget share increase of household expenditures on items within this category corresponds to 25.4%, on average and *ceteris paribus*. There is also a positive estimated effect of external remittances on the budget share allocated to the utilities category. The receipt of external remittances induces a 2.1 percentage point increase in the share allocated to this broadly defined commodity group, on average and *ceteris paribus*, compared to households that receive no such remittances. The sample average budget share of expenditure on this category is 0.131. The corresponding budget share increase is thus approximately 16%.

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11. See appendix for the relevant derivations.

**Table 5.** OLS Estimates of Budget Shares Equations

Variable	Food	Non-food	Durables	Utilities
Constant	1.1380*** (0.0623)	-0.6297*** (0.0540)	-0.0209*** (0.0065)	0.5913*** (0.0290)
Log of Total Household Expenditure	-0.0434*** (0.0061)	0.0838*** (0.0054)	0.0028*** (0.0007)	-0.0476*** (0.0028)
Household Size	0.0025* (0.0015)	-0.0054*** (0.0013)	-0.0012*** (0.0002)	-0.0017** (0.0007)
Age (years)	-0.0006** (0.0003)	-0.0002 (0.0002)	0.0000 (0.0000)	0.0004*** (0.0001)
Male	-0.0114 (0.0079)	0.0197*** (0.0065)	0.0020*** (0.0007)	-0.0039 (0.0042)
Muslim	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Orthodox	-0.0011 (0.0075)	0.0062 (0.0066)	0.0004 (0.0010)	-0.0115*** (0.0033)
Catholic	-0.0239*** (0.0092)	0.0169** (0.0074)	0.0014 (0.0009)	0.0063 (0.0040)
Other Religion	-0.0043 (0.0100)	0.0069 (0.0078)	0.0027** (0.0013)	-0.0060 (0.0054)
Health Disability	-0.0058 (0.0056)	0.0064 (0.0049)	-0.0002 (0.0006)	-0.0020 (0.0026)
Employee	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Farmer	0.0369*** (0.0071)	-0.0200*** (0.0062)	-0.0006 (0.0008)	-0.0093*** (0.0031)
Self-Employed	-0.0472*** (0.0083)	0.0306*** (0.0074)	0.0053*** (0.0011)	0.0140*** (0.0038)

Unemployed	-0.0061 (0.0085)	-0.0052 (0.0075)	0.0006 (0.0009)	0.0119*** (0.0043)
Inactive	0.0196*** (0.0072)	-0.0071 (0.0060)	0.0012 (0.0009)	-0.0010 (0.0033)
Primary: ≤ 4 grades	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Primary: 5 to 8 grades	-0.0049 (0.0087)	-0.0097 (0.0075)	0.0013 (0.0009)	0.0062 (0.0041)
Secondary	-0.0256** (0.0104)	-0.0077 (0.0090)	0.0023** (0.0011)	0.0166*** (0.0047)
Vocational	-0.0091 (0.0095)	-0.0219*** (0.0082)	0.0016* (0.0010)	0.0122*** (0.0045)
University	-0.0418*** (0.0113)	-0.0000 (0.0099)	0.0017 (0.0013)	0.0173*** (0.0051)
Residence Dwelling Area: ≤ 69 Sq. Metres	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Residence Dwelling Area: 70 ≤ Sq. Metres ≤ 130	-0.0104** (0.0047)	-0.0066 (0.0041)	0.0018*** (0.0005)	0.0153*** (0.0022)
Residence Dwelling Area: Sq. Metres > 130	0.0019 (0.0137)	-0.0169 (0.0120)	0.0068*** (0.0021)	0.0193*** (0.0059)
Residence Constructed after 1990	0.0040 (0.0054)	-0.0075 (0.0047)	0.0008 (0.0006)	0.0062** (0.0026)
Tirana	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Central Region	0.0204*** (0.0071)	-0.0291*** (0.0061)	0.0007 (0.0009)	-0.0048 (0.0036)
Coastal Region	-0.0081 (0.0072)	0.0056 (0.0063)	0.0007 (0.0009)	-0.0107*** (0.0034)
Mountain Region	-0.0039 (0.0077)	0.0042 (0.0065)	0.0017** (0.0008)	-0.0222*** (0.0037)
Urban Settlement Type	-0.0357*** (0.0063)	-0.0069 (0.0055)	0.0037*** (0.0007)	0.0267*** (0.0028)

Transfers from Institutions	0.0381** (0.0165)	-0.0309** (0.0125)	-0.0011 (0.0014)	-0.0118 (0.0083)
Social Assistance	-0.0005 (0.0050)	0.0101** (0.0043)	-0.0009* (0.0005)	-0.0015 (0.0024)
No Remittances	<i>f</i>	<i>f</i>	<i>f</i>	<i>f</i>
Internal Remittances Only	-0.0101 (0.0130)	0.0082 (0.0113)	-0.0010 (0.0014)	0.0042 (0.0066)
External Remittances Only	-0.0281*** (0.0061)	0.0023 (0.0052)	0.0033*** (0.0008)	0.0206*** (0.0030)
Internal and External Remittances	0.0023 (0.0196)	-0.0031 (0.0169)	0.0006 (0.0024)	0.0036 (0.0089)
Number of Observations	2931	2931	2901	2930
R <sup>2</sup>	0.1711	0.1671	0.1134	0.2691

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*Notes:*

- (1) \*\*\*, \*\* and \* denote statistical significance at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.
- (2) Robust standard errors reported in parentheses.
- (3) *f* denotes base category in estimation.
- (4) Total household consumption is divided by the normalised Paasche index.

**Table 6.** Marginal Budget Shares and Expenditure Elasticities

	Food	Non-food	Durables	Utilities
Marginal budget share	0.5859*** (0.0061)	0.2851*** (0.0054)	0.0158*** (0.0007)	0.0831*** (0.0028)
Elasticity	0.9310*** (0.0098)	1.4162*** (0.0267)	1.2173*** (0.0505)	0.6360*** (0.0214)

*Notes:*

- (1) \*\*\*, \*\* and \* denote statistical significance at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.
- (2) The marginal budget shares and the elasticities were derived from the OLS estimates reported in table 5 (see appendix).
- (3) Standard errors reported in parentheses.

The econometric results confirm the findings of our descriptive analysis. External remittances increase the households' budget shares of expenditure on durable goods and utilities, and decrease their budget shares of spending on food. Internal remittances, on the other hand, exert no independent impact on spending patterns of Albanian households, which departs from the findings of previous research. Our result might be due to the small cell size of the sample of internal remittance receivers, as mentioned above, or might reflect the fact that internal migration constitutes a first-stage to undertaking the higher cost option of international migration. Another explanation could be that migrants who move within Albania are in poorly remunerated jobs and thus remit less in absolute terms. Consequently one would not anticipate a large effect of internally generated remittances on consumption behaviour.<sup>12</sup>

In order to shed some further light on how external remittances affect the consumption behaviour of Albanian households, a modified version of equation (2) is re-estimated by including three interactive variables defined as the product of the logarithm of total household expenditure and the three dummies capturing receipt of remittances. In the previous analysis we found evidence that the receipt of interna-

12. There is a well established positive empirical relationship between migrant earnings and private transfers. See Liu and Reilly (2004) for details.

tional remittances affected the spending decision of the households across different types of commodities, for a given level of total expenditure. The use of the interactive terms allows us to determine whether the receipt of this source of remittance also affects the household's marginal propensity to consume each type of good. Thus, we are interested in identifying potential differences in the marginal budget shares and the expenditure elasticities of the four types of goods between households that receive external remittances and those that do not. The estimation of the interaction model will also enable us, albeit to a limited extent, to compare our results to those found by other authors in this area of research (e.g., Adams, 2005, and Taylor and Mora, 2006).

Table 7 reports the estimated coefficients for the logarithm of total household expenditure and the interactive variable corresponding to the receipt of external remittances.<sup>13</sup> The estimated household expenditure coefficient now reflects the effect for the base group that receives no remittances. The estimated effect for the category of external remittance receivers is the sum of this coefficient and the coefficient for the relevant interaction term. The estimated coefficients for all other variables used in estimation, including the interactive terms corresponding to the other two groups of remittance receiving households, are omitted from this table to conserve space. These estimates are then used to compute the marginal budget shares and the elasticities for the four commodity categories for the households which receive external remittances and those which receive no remittances (which is our base category).

The table shows that the marginal budget shares and the expenditure elasticities for the remittance receiving households are significantly different from those of non-receiving households only for the pair of categories of food and utilities. In particular, the estimates for the marginal budget shares reveal that for a one Lek increase in the household's budget, on average and *ceteris paribus*, households in receipt of external remittance spend nearly 0.02 of a Lek more on food commodities than households which do not receive any source of migrant transfer. This, however, corresponds to a modest percentage change increase of expenditure on food of 3.1%. On the other hand, the expenditure elasticity of demand for food for external remittance receivers is higher than that for non-remittance receivers, while the converse is true for utilities. Furthermore, applying a t-test, the hypothesis of a unitary elastic demand for food for the households which receive external remittances cannot be rejected by the data. Thus, these households appear to have a more elastic expenditure response to food purchases and the classification of such purchases is no longer as a necessary good.

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13. As in the case of the basic model, the estimates in relation to the key variables of interest to us for the model with interaction terms were insensitive to the addition of the square of the logarithm of total expenditure.



**Table 7.** OLS Estimates of Budget Shares Equations with Interaction Terms

	Food	Non-food	Durables	Utilities
Log of Total Household Expenditure	-0.0500*** (0.0069)	0.0864*** (0.0061)	0.0027*** (0.0007)	-0.0432*** (0.0031)
Log(Expenditure)*External remittances only	0.0322** (0.0130)	-0.0124 (0.0117)	-0.0013 (0.0017)	-0.0243*** (0.0063)
Marginal budget share - External remittances only	0.5995*** (0.0120)	0.2691*** (0.0108)	0.0172*** (0.0016)	0.0827*** (0.0057)
Marginal budget share – No remittances	0.5815*** (0.0069)	0.2900*** (0.0061)	0.0152*** (0.0007)	0.0825*** (0.0031)
Elasticity - External remittances only	0.9712*** (0.0194)	1.3792*** (0.0554)	1.0940*** 0.1019	0.5510*** (0.0380)
Elasticity – No remittances	0.9208*** (0.0109)	1.4245*** (0.0300)	1.2184*** (0.0560)	0.6565*** (0.0247)

*Notes:*

- (1) This table reports only two estimated coefficients from the OLS estimates of equation (A5).
- (2) \*\*\*, \*\* and \* denote statistical significance at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.
- (3) Robust standard errors reported in parentheses.
- (4) The marginal budget shares and the elasticities were derived from the estimated coefficients reported in the present table (see appendix).

This result in regard to the marginal budget share for food for the households receiving external remittances is not consistent with the findings of Adams (2005) and Taylor and Mora (2006), who show that, at the margin, households which receive migrant remittances or have international migrants abroad, spend considerably less on food than those which either do not receive any remittances (see Adams, 2005) or have no migrants abroad (see Taylor and Mora, 2006). Note, however, that neither Adams (2005) nor Taylor and Mora (2006) provided estimates for the expenditure elasticities of demand of the various categories of consumption, thus the classification of their goods is difficult. Moreover, we cannot compare our findings on durables and non-food with their results, because their category of durables includes clothing, which in our work is classified as a non-food item. Similarly, Adams (2005) and Taylor and Mora (2006) use a different categorisation for utilities, and place these in the 'other' category, where transport and communications are also included. On the other hand, Zarate-Hoyos (2004) shows that households which receive remittances have lower income elasticities for current consumption. However, the author does not report estimates for each item of current consumption (food, non-food, durables, utilities), since the focus of that paper is on the effect of remittances on current consumption as opposed to investment expenditures.

## Conclusions

This paper uses data drawn from the 2002 Albania Living Standards Measurement Survey to investigate whether the receipt of migrant remittances has an effect on the consumption patterns of recipient households. We also test whether the receipt of remittances from a migrant within Albania has the same effect on consumption behaviour as the receipt of remittances from abroad. We estimate budget share equations for four broadly defined categories controlling for a number of variables including those capturing whether or not the household receives remittances from within Albania or abroad. The four categories of commodity considered are food, non-food, durables and utilities.

The estimated coefficient corresponding to the variable capturing the receipt of internal remittances is not statistically significant in any of the reported budget share equations. In contrast, the estimated effect for the receipt of international remittances is found to be statistically significant for all categories except non-food. Our estimates suggest that compared to those households which receive no remittances at all, the average budget share of expenditure on food for households in receipt of external remittances is 4.5% lower, *ceteris paribus*. The receipt of external remittances, on the other hand, induces an increase of over 25% in the household's budget share of durables and an approximate 16% increase in the household's budget share for the utilities category, *ceteris paribus*. However, an analysis of the marginal propensities to consume shows that even the effect of international remittances is relatively mod-

est in our case, compared to findings from studies that apply a similar approach to data from other countries (see Adams, 2005, and Taylor and Mora, 2006).

In particular, the lack of an effect of internal remittances on spending patterns might be due to the small number of households which are in receipt of this type of remittance in the data used here. However, this could also be attributable to the fact that migrants who move within Albania may not be employed in well paid jobs and, as a consequence, tend to remit less. Therefore, one would not anticipate a sizable effect of such remittances on consumption behaviour. In contrast, the higher amounts of remittances from external sources may be expected to make a significant difference to the overall welfare of the receiving households. This issue, however, highlights one limitation of this study in that we do not attempt to investigate whether or not the remittance effect is driven by the initial differences in welfare between remittance receivers and non-receivers.<sup>14</sup>

In contrast to Adams (2005) and Taylor and Mora (2006), we find that households which receive external remittances display a higher marginal propensity to consume food items relative to those which do not receive any source of remittance, although this only increases by a modest 3.1% in our case. This result might be explained by the fact that households which receive external remittances do not classify food as a necessary good anymore and when they become richer they tend to switch from poor quality to better quality food types. This issue clearly warrants further research.

Nevertheless, the present paper provides evidence that remittances tend to increase a household's propensity to consume investment-type goods. We need to stress that in the context of Albania, where households face severe and frequent cuts in the provision of power and water, increased spending on utilities might also reflect enhanced investment activity. Furthermore, with reference to the category of durables, even items that might be seen as non-investment goods, such as TV and domestic appliances, may have multiplier effects within the local economy, as increased demand for these types of goods may create incentives for the establishment of new retail businesses.<sup>15</sup> On the other hand, previous research shows that new resources that are often generated by Albanian emigrants, such as refrigerators and vehicles (e.g., vans and tractors), are used to set up or improve existing small-scale family businesses, as well as trading and agricultural activities (see Nicholson, 2001).

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14. Qualitative studies, on the basis of the perception of the Albanian population, seem to support the idea that migration generates wealth and not the opposite (see De Soto *et al.*, 2002, page 46).

15. This argument, however, is not valid if the goods are imported or brought back by the emigrants, which is often found to be the case in Albania (see, e.g., De Soto *et al.*, 2002, page 46).

The broader applicability of our findings needs to be interrogated further and this could be done by extending the present analysis to investigate the impact of remittances on investment commodities (e.g., education, health and housing). However, we believe that the current study provides a worthwhile contribution to an under-researched area investigating the role of Albanian migrants' remittances at the household level. In particular, the present paper suggests that emigrants' remittances to Albania are affecting household expenditure behaviour across several consumption goods, although we acknowledge the effect is less pronounced than that suggested by comparable research for other developing countries.

It is possible that migrant remittances may ultimately exert an impact on the local economy, through, for example, enhanced investment in small businesses. Thus, the Albanian government should look more critically at household response to remittances and facilitate both the transfer of remittances and their channelling to productive uses, by creating the conditions for a stable investment environment in the country.

Finally, we believe that further analysis is required to explore in more detail the effect of migrant remittances on expenditure within the highly aggregated non-food category. This category includes a range of goods, such as clothing, housing repairs, services, entertainment, alcohol and tobacco, which, if considered in isolation, could shed light on which members of a household benefit most from remittances (e.g., children, adults, the elderly, etc.). The poorly determined effect of migrant transfers on this conflated category might disguise important variation in effects within more finely defined categories.

## Appendix

### Expressions for the Marginal Budget Shares and Expenditure Elasticities

Using the model described as (2) in the text:

$$w_{ij} = \alpha_j + \beta_j \ln(x_i) + \mathbf{z}'_i \boldsymbol{\gamma}_j + \mathbf{D}'_i \boldsymbol{\theta}_j + v_{ij}, \quad i=1,2,\dots,n \quad (\text{A1})$$

The marginal budget share for good  $j$  and household  $i$  is defined as follows:

$$mbs_{ij} = \frac{\partial c_{ij}}{\partial x_i}$$

where  $c_{ij}$  is the consumption of good  $j$  by household  $i$ , and  $x_i$  is the total consumption by household  $i$ . However, the budget share of good  $j$  and household  $i$  is defined as,

$$w_{ij} = \frac{c_{ij}}{x_i}$$

so the partial derivative of the budget share with respect to total consumption is as follows:

$$\frac{\partial w_{ij}}{\partial x_i} = \frac{x_i \frac{\partial c_{ij}}{\partial x_i} - c_{ij} \frac{\partial x_i}{\partial x_i}}{x_i^2} = \frac{\beta_j}{x_i}. \quad (\text{A2})$$

Solving for  $\frac{\partial c_{ij}}{\partial x_i}$  in equation (A2) we find:

$$mbs_{ij} = \beta_j + \frac{c_{ij}}{x_i} = \beta_j + w_{ij}. \quad (\text{A3})$$

The OLS estimates and the mean budget shares can be used to calculate expression (A3).

Using the definition of elasticity, the expenditure elasticity of good  $j$  for household  $i$  is computed as:

$$\eta_{ij} = (\beta_j + w_{ij}) \frac{1}{w_{ij}} = \frac{\beta_j}{w_{ij}} + 1. \quad (\text{A4})$$

For the  $i^{\text{th}}$  individual the model with interaction terms is given by:

$$w_{ij} = \alpha_j + \beta_j \ln(x_i) + \ln(x_i) \mathbf{D}'_i \boldsymbol{\beta}_j^* + \mathbf{z}'_i \boldsymbol{\gamma}_j + \mathbf{D}'_i \boldsymbol{\theta}_j + \eta_{ij} \quad (\text{A5})$$

In this case, we can compute the marginal budget shares and the expenditure elasticities for the two groups of external remittance receivers and non-remittance receivers. In particular, if the household receives external remittances only,

$$mbs_{ij} = \beta_j + \beta_j^* + w_{ij} \quad \text{and} \quad \eta_{ij} = \frac{\beta_j + \beta_j^*}{w_{ij}} + 1,$$

whereas, if the household receives no source of remittance,

$$mbs_{ij} = \beta_j + w_{ij} \quad \text{and} \quad \eta_{ij} = \frac{\beta_j}{w_{ij}} + 1. \text{ }^{16}$$

Thus, as we did in the previous case, we estimate the marginal budget shares and expenditure elasticities of the four types of commodities for the two different groups of households by substituting in the above expressions the OLS estimates of the coefficients  $\beta_j$  and  $\beta_j^*$  and the two sub-sample means of  $w_{ij}$ .

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16. Note that for simplicity we are using the same notation for the vector of coefficients of the three interactive variables,  $\beta_j^*$ , and for the scalar coefficient of the interactive variable of the logarithm of total household expenditure and the dummy of external remittance receipt, which is our focus in the interactive model.

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