

Are remittances a resource for human capital accumulation? A cross-country analysis in Sub-Saharan Africa*

(Work Draft)

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Abstract

The impact of remittances on household's expenditure behaviour depends on how household perceives remittances. The literature shows three main results: remittances perceived as a fungible income, households use them as any other income source; remittances perceived as compensatory income, households use them in favour of consumption goods; remittances perceived as transitory income, households use them in favour of investment goods. Using the Working-Leser model we analyse the average impact of remittances on nine households budget shares divided in consumption goods and capital accumulation goods in five Sub-Saharan African countries. We propose two different methods to capture the impact of remittances on household's expenditure behaviour. In the first method, according to the literature, we analyse remittances from the country of origin (national and international). In the second method, we analyse remittances according to the ratio of remittances on household expenditure. In conclusion, we find that the ratio of remittances on household expenditure explains how households perceive remittances. On average, when the ratio of remittances on household expenditure increase, households perceive remittances as transitory income and they use them at the margin in favour of capital accumulation goods.

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1. Introduction

In 2015 the number of international migrants surpasses 251 million of people, around 3,4% of world population, and in terms of remittance's flows, developing countries receive about 441 billion US dollar, three times the amount of official development assistance¹. This cash inflow constitutes more than 10% of GDP in some 25 developing countries (World Bank, 2016).

These dates show that remittances are playing an important role in the developing countries' economies. For instance, Adams and Page (2005) and Pradhan et al. (2008) find a positive effect of remittances on poverty decline in most of the analysed countries.

Remittances are becoming a fundamental source of external funds for developing countries and an external income for households. From the household point of view, remittances could relax budget constraint and to lead capital accumulation. However, households receive remittances under imperfect information, uncertainty and with different regularity (Seshan, 2015; Chami et al., 2005). Thus, how households perceive remittances is not straightforward and this drives the most of the debate on the literature.

Therefore, two important questions stand out: (i) remittances change households' expenditure behaviour; and (ii) households use remittances on newly desired consumer goods or they use them into human and physical investment.

The purpose of this work is to contribute and extend the debate about the relationship between remittances and household expenditure behaviour by analysing the data of the household survey on migration and remittances of African Migration Project (AMP) undertaken by the African Development Bank and the World Bank.

First, we divide household expenditure in seven budget share categories separating consumption goods and investment goods, successively we analyse if households that receive remittances change expenditure behaviour in favour of consumption goods or on the contrary in favour of investment goods. In particular, we are interested to understand if remittances can shift household expenditure behaviour in favour of investment goods and consequently if they are a source for human capital accumulation.

Sub-Saharan Africans (SSA) countries are a good case study to examine these issues for at least two reasons. First, AMP project allow to have five countries surveys with the same structure which describe migration and remittances pattern in the countries. Second, most of the literature focuses on Latin America and Asia thus the relationship between remittances and household's

¹ Even more World Bank (2016) estimate that the true size of remittances, including unrecorded flows through formal and informal channels, is significantly larger.

expenditure behaviour in SSA countries is relatively unexplored topic despite the great presence of migration and remittances in these countries.

Migrants from SSA are around 23.2 million people, of whom 26% live in OECD countries and 65.6% within the Region. Whereas remittances to the region amount to 35 billion of US dollar in 2015 (World Bank, 2016). Furthermore, in SSA countries, remittances seem to be an important source of economic growth and financial development (Gupta et al., 2009; Nyamong et al., 2012; Beyene, 2014). However, this positive effect is achieved only under the condition that remittances are stable (Nyamong et al., 2012; Beyene, 2014; Amuedo-Dorantes and Pozo, 2014).

The literature presents three main results about the relationship between remittances and household expenditure behaviour. This relationship mainly depends on the way that households perceive remittances. In a first result, remittances are a fungible income and households use them at the margin like an income from any other source. Thus, remittances do not change the household expenditure behaviour. A second result argues that remittances are a compensatory income and therefore remittances shift the household expenditure behaviour in favour of consumption goods rather than investment goods. In the last result, which is a part of the permanent income hypothesis, remittances are a transitory type of income and they shift the household expenditure behaviour in favour of investment goods like human and physical capital.

In this literature, remittances are analysed in considering the country of origin and they are divided between international and national. Instead, in this work, we propose two methods of analysis. In the first method, we analyse remittances in considering the country of origin as in most of the literature. We identify four origin areas: Rural remittances, Urban remittances, African remittances, OECD remittances and Other countries remittances. In the second method, we consider the ratio between remittance and household total expenditure.

To test these two methods, we analyse five countries² separately and then in a pooled regression. This allow to observe if the second method can capture the household expenditure behaviour although each country has its own characteristics.

We show that on average, households perceive remittances as fungible income with positive effect on total expenditure whereas the shift of the household expenditure behaviour depends on the ratio between remittance and household total expenditure. Most remittances are greater related total expenditure, households perceive remittances as a kind of savings and they change the expenditure behaviour in favour of investment goods. At the opposite most remittances are less than the total expenditure, households perceive remittances as fungible or compensatory income and this does not change expenditure behaviour in favour of investment goods.

² Burkina Faso, Kenya, Nigeria, Senegal and Uganda.

This idea is in line with the permanent income hypothesis, where consumption is determined also by their expected income and remittances represent the transitory income.

Lastly, the focus of this work is on the receiving of remittances by the household, thus households are considered as remittances receivers or non-remittances receivers. We do not consider migration aspects and the characteristics of person who send remittances. Moreover, we do not consider in-kind remittance but only cash remittance even if we have information on it³. Furthermore, we do not consider the cost of remittances or migration. In any way, in our case it is necessary to assume that the amount of income provided by migration transfers is greater or equal than the labour income that the same individual would have had in case of no migration.

In order to assess that, we use the Working-Leser model (Leser, 1963; Working, 1943), which relates budget shares linearly to the logarithm of total household expenditure. For the Working-Leser model, we carry out the estimations using Ordinary Least Squares (OLS).

The rest of the work is structured as follow. Section 2 presents the literature review on the relationship between remittances and household expenditure behaviour in developing countries. Section 3 describes the dataset used in this study. Section 4 presents the methodology adopted in our analysis. Section 5 discusses the empirical results and the mains findings. Section 6 concludes the work.

2. Literature review: the relationship between remittances and household expenditure behaviour

There is a vast literature that analyses the impact of remittances on household expenditure behaviour which is linked with three main results presented above.

Several works show a positive relationship between remittances and investment goods expenditure. Edward and Ureta (2003) find that international remittances have a large positive impact on children's education in El Salvador as well as Yang (2008) reports that in Philippines, positive exchange rate shocks lead to a significant increase in remittance expenditures on human capital accumulation (child schooling and educational expenditure) and entrepreneurship.

More generally, a positive relationship between remittances and investment goods expenditure is showed by Taylor and Mora (2006) in Mexico, Adams and Cuechueca (2010a) in Guatemala and Chiodi and Montes-Rojas (2012) in rural Mexico. According to their results, remittances favourably affect the asset accumulation by increasing the share of expenditure on

³ In fact, we are interested on how remittances change the household expenditure behaviour, and in-kind remittance is a sort of ex-ante binding remittance by the migrant.

investment goods over consumption goods. Also, Adams (1998) finds that remittances help to increase investment in rural area of Pakistan by rising the marginal propensity to invest for migrant households.

Regarding the analysis in SSA countries, in Nigeria Osili (2004) shows that a large proportion of remittances are used for housing goods⁴. Similarly, in Ghana Adams and Cueuruecha (2013) demonstrate that households receiving remittances spend more at the margin on three investment goods: education, housing and health. A positive effect on child education is also supported by Kifle (2007) in the case of Eritrea.

On the contrary, Chami et al. (2005) affirms that remittances are not a significant source of capital accumulation for economic development⁵. Also Cattaneo (2012) shows that remittances are not a source of human capital accumulation in terms of education expenditure in Albania.

In line with the latter results is Adams and Cueuruecha (2010b) in Indonesia where remittances affect positively the marginal expenditure on consumption goods (food) rather than investment goods.

Similarly, Clement (2011) in Tajikistan shows that remittances significantly increase the household consumption goods even if the results of national remittances are more ambiguous. In fact, they reduce expenditure in housing and agriculture but increase expenditure in health. Also, Airola (2007) finds that households in Mexico use remittances on consumption goods.

Finally, various studies demonstrate that remittances have a neutral effect on household expenditure. For instance, Acosta et al. (2007) find a neutral effect of remittances in comparing eleven countries in Latin America⁶. Similar results are showed by Castaldo and Reilly (2007) in Albania and Ang et al. (2009) in the Philippines.

In SSA countries, Adams et al. (2008) arrive at the conclusion that remittances have no effect on household marginal expenditure behaviour in Ghana. As well, Randazzo and Piracha (2014) demonstrate a neutral effect of remittances in the decision on how to allocate expenditure in Senegal.

Many authors explain these differences in the empirical results by the fact that countries are different in income level and in investment opportunities (Adams et al., 2008; Randazzo and Piracha, 2014). They support that households in middle-income countries use remittances differently than in countries with a low-income level.

⁴ Under the standard investment explanation, migrants invest in housing assets in the origin community because these investments yield high rates of return relative to the return on other assets (Osili, 2004).

⁵ However, their empirical approach was challenged by Catrinescu et al. (2009) who, using the same data as Chami et al. (2005), showed that omitted variable bias was partially responsible for their results. In particular, controlling for political institutions in the receiving country, Catrinescu et al. (2009) showed a positive effect of remittances on investment and therefore on GDP growth.

⁶ However, Acosta et al. (2007) finds that remittances have a positive effect on education and health on a specific group of the population.

As we will show in the next part of the work, these opposing results are probably due to the fact that remittances country of origin is unable to capture the way on how households perceive remittances. Instead, if we consider the ratio between remittances and total household expenditure, this could capture the weight of remittances on the household budget. In fact, when remittances are a significant source of income, households change their expenditure behaviour in favour of investment goods because they perceive remittances as a kind of saving. In any case, this hypothesis is in line with the streams of literature presented above and in particular with the idea of permanent income hypothesis.

3. Data

We investigate the household consumption and investment expenditure behaviour using data from Migration and Remittance Household Survey conducted in Burkina Faso, Kenya, Nigeria, Senegal and Uganda during 2009⁷. These surveys are a part of the AMP project undertaken jointly by the African Development Bank and the World Bank. The aim of the project was to improve the understanding of migration and remittances in SSA countries, including their magnitude, causes, and impacts on poverty reduction, with a view to generate informed policy recommendations.

This five surveys have been implemented with a standard methodology in order to allow comparisons across countries and to provide a regional migration and remittances issues at the household level in the five surveyed countries. Each survey cover migration and remittance trends, housing conditions, household asset and expenditures, use of financial services, internal and international migration and remittances from former and non-former⁸ household members and return migration patterns⁹.

Therefore, these data present a double opportunity: (i) they have a standardized methodology that allows a comparison across countries and (ii) respect to data from a standard household survey, AMP data represent the migration and remittances pattern in the country.

To the definition given by the survey cited above a *migrant* is “a person who used to live in a household in the country in which the interview is being conducted, but left before the interview to live abroad, or in another village or urban area within the country, for at least six months”. Whereas *remittances* “include both international (cross-border) and internal (within-country) person-to-person transfers of resources (both money and in-kind) often sent by migrant workers”.

⁷ AMP also included South Africa but we exclude it because South Africa is predominantly immigrant-receiving country.

⁸ They are individuals who regularly send remittances but they have not been part of the current household.

⁹ A return migrant is defined as a person over 18 years old currently living in the household who had lived in another country or place for at least three months in the 5 years preceding the survey.

In the first analysis, we classify households from the country of origin of remittances and we identify five main areas¹⁰. Nevertheless, this distinction does not allow to classify households into a mutually exclusive groups¹¹, thus in table 1, we classify households into four mutually exclusive groups to show the magnitude of each country in our sample. The four groups are: (i) households who do not receive remittances, (ii) households who receive remittances from national migrants, (iii) households who receive remittance from international migrants and (iv) households who receive remittances from both national and international migrants. Instead in the second analysis, we classify households in five categories which correspond the quantile distribution of the ratio between remittances and total household expenditure.

Due to missing information in some variables¹², we restrict the analysis to 2,033 households in Burkina Faso, 1,693 households in Kenya, 2,177 households in Nigeria, 1,937 households in Senegal and 1,826 households in Uganda.

Surveys collect detailed information on different types of household expenditure. We aggregate them considering the following expenditure categories: food, basic food, protein food, consumption goods, education, health, house, investment, other. Table 2 lists what each category of expenditure contains.

However, some expenditure categories are expressed in weekly and monthly amount whereas others types of expenditure refer to the last six months. As the objective is to understand the impact of remittances on household decision, we multiply weekly and monthly expenditure to obtain a six months' value. We do not adopt an annual value because we consider that some expenditure categories as investment goods are a punctual expenditure, thus it is not possible multiply this type of expenditure to obtain an annual value. In table 3 we show the overall average budget share of each group of commodities.

Our approach is to group these expenditures into two main categories, which we define as “consumption expenditure” and “capital accumulation expenditure”. We define capital accumulation expenditure in a broad sense to include spending on the accumulation of human capital (education and health) and of physical asset (house and investment). On the other hand, consumption expenditure include food (basic food and protein food), consumption good and other.

Our unit of analysis is the household therefore we present on table 4 the main household characteristics on average among countries. Concerning household income, we do not have any

¹⁰ Rural remittances, Urban remittances, African remittances, OECD remittances and Other countries remittances.

¹¹ A household can receive remittances from one or more area.

¹² We eliminate households with zero food consumption and household with missing data in control household variables presented in table 4. The original dataset was: 2,102 in Burkina Faso; 1,942 in Kenya; 2,251 in Nigeria; 2,100 in Senegal; 1,961 in Uganda.

information on earnings but in line with most of the literature (Adams and Cueuruecha, 2010b; Adams et al., 2008) we consider total expenditure as a proxy of income.

At last, in each country expenditure and remittances are expressed in local currency (LCU), thus to compare the five analysed countries we need to standardize these variables. World Bank's PPP convertors factors¹³ from 2009 have been employed and each LCU is converted in USD¹⁴.

4. Methodology

From a theoretical point of view, we use Engel curve to analyse the household's expenditure of specific good relative to household's total resources holding prices fixed¹⁵.

Analytically the function is shown by expression (1) below:

$$C_i = f(y, z) \tag{1}$$

Where C_i is amount spent on good i , y is household income and z is a vector of other household characteristics among which remittances. To separate the problem of allocating total consumption to various goods from the decision of how much to save or dissave out of current income, we use total expenditure rather than income.

A useful empirical model to estimate Engel curve is the Working-Leser model (Working, 1943; Leser, 1963) which relates the household budget share allocated to specific types of goods to total household expenditure. More specifically, Working-Leser model is a demand function in a single equation where each budget share is a linear function of the logarithm of the total expenditure.

According to Adams and Cueuruecha (2013) Working-Leser model fulfils three important criteria. First, it provides a good statistical fit to a wide range of goods. Second, it mathematically allows for rising, falling or constant marginal propensities to spend over a broad range of expenditure. In a nutshell, the slope is free to change with the expenditure level. Third, it is conforming to the criterion of additivity.

In the model formulation we follow the procedure presented by Adams and Cueuruecha (2010a). Hence, we can write the Engel function as:

¹³ Purchasing power parity conversion factor is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as USD would buy in the US. This conversion factor is for private consumption.

¹⁴ Convertor factors are: Burkina Faso 228.5; Kenya 31.3; Nigeria 66.2; Senegal 246.5; Uganda 804.5.

¹⁵ We assume the law of one price that all sampled consumers paying the same price for all goods and that all consumers have the same preferences after characteristics conditioning.

$$C_i = \alpha_i + \beta_i EXP + \gamma_i(EXP)(\log EXP) \quad (2)$$

As we are focused on household expenditure behaviour, we transform eq. (2) to express expenditure in terms of budget share which capture the proportion between consumption goods and investment goods. Hence, we rewrite the model as:

$$C_i/EXP = \beta_i + \alpha_i/EXP + \gamma_i(\log EXP) \quad (3)$$

Where C_i/EXP is the share of expenditure on good i in total expenditure EXP with the criterion of additivity $\sum C_i/EXP = 1$.

To analyse the household expenditure behaviour with different levels of income, various socioeconomic factors need to be considered. Hence, we include into basic Working-Leser model some variables of household characteristics which affect the budget shares allocated to the different types of goods and it also allow to control observed household's heterogeneity. We consider remittance among these variables.

Furthermore, household's characteristics introduces considerably more flexibility in the way that marginal budget shares can vary by household type, in a nutshell they allow to shift both the intercept and the slope of the Engle functions.

So, let Z_j denote the j th household characteristic variable and let u_{ij} and θ_{ij} be constants. The complete model is then:

$$C_i = \alpha_i + \beta_i EXP + \gamma_i(EXP)(\log EXP) + \sum_j [(u_{ij})(Z_j) + \theta_{ij}(EXP)(Z_j)] \quad (4)$$

Written in expenditure share form, this is equivalent to:

$$C_i/EXP = \beta_i + \alpha_i/EXP + \gamma_i(\log EXP) + \sum_j [(u_{ij})(Z_j)/EXP + \theta_{ij}(Z_j)] \quad (5)$$

Considering that we are interested to capture whether relevant differences exist in the marginal expenditure behaviour among households receiving and not receiving remittances, from equation (5) the marginal (MBS_i) and average (ABS_i) budget shares for the i th good can be derived as follows:

$$MBS_i = dC_i/dEXP = \beta_i + \gamma_i(1 + \log EXP) + \sum_j [(\theta_{ij})(Z_j)] \quad (6)$$

$$ABS_i = C_i/EXP \quad (7)$$

Equation (6) shows the response in the budget share of good i , to one monetary increase in remittances and total expenditure holding constant household characteristics.

To estimate equation (6), the various household variables need to be specified and identified. Therefore, we introduce HS as household size, CHILD5 as the percentage of children below age 5, CHILD15 as the percentage of children between age 5 and age 15, ELD62 as the percentage of household member above age 62, FEM15 as the percentage of women above age 15, FEMHD as a dummy variable for female household head, AGEHD as the variable for age of household head, EDUII as a dummy for household head with an education level above secondary level, AGRAND as a dummy for owing agricultural land, HOUSE as a dummy for owing house, WORK as the percentage of workers in the household.

Finally, to estimate the impact of remittances on marginal household expenditure behaviour, we use two methods. In the first method, we use the logarithm of total remittances amount which each household receive from the five countries area with the aim to understand how different areas affect at the margin each budget share. In the case of non-receiver households, we have a zero value. To capture the heterogeneity from each area, we divide national remittances in urban and rural, and international remittances from OECD countries, African countries and others countries.

In the second method, we use the ratio of total remittances amount on household expenditure then, we create a categorical variable that contains categories corresponding to quantiles distribution of this ratio. The categories created are $[0, x_{[20]}]$, $(x_{[20]}, x_{[40]})$, $(x_{[40]}, x_{[60]})$, $(x_{[60]}, x_{[80]})$, $(x_{[80]}, +\infty)$, where $x_{[20]}$, $x_{[40]}$, $x_{[60]}$, $x_{[80]}$ are respectively, the 20th, 40th, 60th and 80th percentile of the ratio.

Finally, we estimate the two methods for each country in a separated manner and later in a pooled regression. In the pooled regression we consider a dummy for each country (COUNTRY) to take into account unobserved heterogeneity among countries. In each regression we estimate the model for all nine expenditure categories.

5. Remittances framework in the five countries

Burkina Faso is the country that on average households receive the lower amount of remittances. At the opposite, households in Kenya receive on average the highest amount of remittances. Finally, Households in Nigeria and Senegal have a similar situation whereas households in Uganda receive on average less related the two countries (figure 2).

Most of remittances come from OECD countries, respectively 55.93% in Kenya, 60.07% in Nigeria, 61.97% in Senegal and 45.03% in Uganda. Instead, in Burkina Faso most of remittances

come from African countries (55.35%). The second area of origin change among countries. In Nigeria Urban remittances represent the 31.37% of total remittances as well as in Burkina Faso where Urban remittances represent the second source with 23.46%. Instead, in Senegal and Uganda, Urban remittances and African remittances are similar with a slight majority from Urban remittances. Finally, in Kenya the second area of origin is represented by African countries with 30.14% of total remittances. Rural remittances are not relevant in most of analysed countries except in Burkina Faso (8.41%) and Uganda (6.60%) (Figure 1).

However, this does not represent the real weight of remittances for households. In fact, if we observe the ratio of remittances on total household expenditure the framework changes (figure 3). For example, in Kenya, remittances from African countries are most important than remittances from OECD countries. Similarly, although in Burkina Faso households receive most remittances from African countries, remittances from OECD countries are most important than those from African countries. Instead, in Nigeria, Senegal and Uganda the framework is still similar.

This different framework has important implication on the results. As we will see on the next section, when the framework does not change the country origin of remittances explain in similar manner the household expenditure behaviour but when the framework changes as in the case of Kenya or Burkina Faso the ratio of remittances on total expenditure capture in better manner the household expenditure behaviour.

At last, if we observe table 4, household control variables are different among countries. In Burkina Faso and Senegal, households are relative big (8.9 in Burkina Faso and 9.2 in Senegal), with high presence of children (0-4, 15.60%; 5-15, 32,60% in Burkina Faso and 0-4 10.30% in Senegal), they are house owner (93,70% in Burkina Faso and 79.90% in Senegal) with a high presence of workers (52.50% in Burkina Faso and 34.90% in Senegal). However, in Burkina Faso households are most land owner than households in Senegal (92.90% in Burkina Faso and 41.20% in Senegal).

At the opposite in Kenya and Uganda, households are relative small (4.1 in Kenya and 4.9 in Uganda) and in Kenya households have also a low prevalence of children (0-4, 7.85%; and 5-15, 19.19%).

The education level of household head is low in Burkina Faso and Senegal households (4.60% in Burkina Faso and 22.60% in Senegal) whereas it is high in Kenya and Nigeria households (49.79% in Kenya and 53% in Nigeria). Female household head is more present in Senegal (33.40%) and Kenya (31.25%) whereas it is less present in Burkina Faso (6.50%) and Nigeria (12.80%). Finally, in Uganda, households have the youngest average household head (42.7), conversely in Senegal households have the oldest average household head (53).

6. Results

In the present section, we estimate equation (5) and we focus the analysis on the coefficient θ_{ij} to capture the relationship between remittances and household expenditure behaviour.

We present results for each country (Burkina Faso, Kenya, Nigeria, Senegal and Uganda) and later we pool the data. All regression estimation tables are presented in annexe from Table 5 to Table 15.

Generally, in all five countries remittances increase total expenditure independently of origin, except in some case. Moreover, an increase on total expenditure shift household behaviour from food goods to consumption goods in Burkina Faso and Senegal, to investment goods in Kenya and both to consumption goods and investment goods in Nigeria and Uganda.

Regarding the different origins of remittances, Urban remittances shift expenditure behaviour in favour of capital accumulation in Burkina Faso (education by 0.1% and health by 0.1%), in Kenya (investment goods by 0.1%) and in Nigeria (education by 0.1%). Whereas in Senegal, Urban remittances increase basic food expenditure (0.2%), as well as in Uganda, Urban remittances increase consumption goods expenditure (0.3%). Similarly, Remittances from OECD countries increase expenditure on health in Kenya (0.2%), on protein food (0.1%) and house goods (0.2%) in Nigeria, and they decrease food expenditure in Senegal by 0.2%.

Rural remittances are not significant in almost all countries, only in Kenya, Rural remittances reduce protein food expenditure by 0.2%. Also, African remittances are not particularly significant, in Kenya, they raise expenditure on house goods by 0.5% and they reduce basic food expenditure by 0.5% in Nigeria.

At the end, remittances from other countries decrease protein food expenditure by 0.5% and house goods expenditure by 0.1% in Burkina Faso, as well as in Kenya, house goods by 0.5%. In Nigeria, remittances from others countries reduce protein food expenditure by 0.9% and investment goods by 0.2%.

Therefore, we observe a contrast results and in each country the relationship between remittances and household expenditure behaviour is not clear. In particular, we do not find a clear pattern in separating remittances by origin.

Instead, if we observe the quantile distribution of the ratio of remittances on expenditure, we find a clear link between remittances and household expenditure behaviour. In particular, households in the fifth quantile shift expenditure behaviour in favour of capital accumulation goods. In Burkina Faso health expenditure increases by 1.3%, in Kenya by 1.2% and in Uganda by 1.1%, as well as, education expenditure raises by 1.6% in Nigeria, 0.6% in Senegal, and 2% in Uganda. Moreover, in

Nigeria, households in the fifth quantile also increase expenditure on house goods by 2.2% and they decrease expenditure on food by 5.3% and in particular basic food (6.4%).

In Nigeria, also households in the fourth quantile shift expenditure behaviour in favour of capital accumulation goods, respectively education by 1% and health by 0.6%, as well as in Senegal households in the fourth quantile increase education expenditure by 0.5%.

At the opposite, households in the third quantile decrease health expenditure by 1.5% in Burkina Faso and they increase food expenditure by 5.1%, in particular basic food (5.9%) in Kenya.

The same results are found when we pool the data and we introduce country dummies¹⁶. Only remittances from Urban area and OECD countries change household behaviour in favour of capital accumulation, in particular protein food (0.1%), education (0.1%), health (0.1%) and investment goods (0.1%). Whereas, remittances from Rural, African and Other countries do not change household behaviour. And this is confirmed by households in the fifth quantile that shift expenditure behaviour in favour of capital accumulation, respectively education by 0.9%, health by 0.9% and investment goods by 0.4%.

In fact, these two areas are also those who migrant can take advantage of the income differentials between the country of origin of remittances and the area of destination of remittances¹⁷. If we consider remittances from African and Other areas, we do not have a differential expected income between household country and migrant country. Conversely, if we consider remittances from Urban and OECD areas, we have this differential expected income between household country and migrant country and this lead the capital accumulation. Generally, rural-urban and DCS-DC migration allow this expected income differential between areas.

7. Conclusion

In the last decades, remittances have become an important issue for development economics and in particular, remittances are an important source of external income which can lead household capital accumulation and consequently to activate a virtuous economic process by relaxing budget constraint.

The impact of remittances on expenditure behaviour depends on how household perceive them and this is a controversial issue. Most of the literature capture this aspect analysing the question from the point of view of the country of origin of remittances, generally national or international. Instead,

¹⁶ We use dummy for Kenya, Nigeria, Senegal and Uganda, whereas for Burkina Faso, constant is the dummy. We use Burkina Faso as reference because it is the country with the lower amount of remittance.

¹⁷ See Harris and Todaro (1970).

in this work, we propose an analysis which measure remittances as the ratio of remittances on total household expenditure.

Our findings confirm that households perceive remittances as a transitory income more the ratio raise. This means, more remittances are large relative to total expenditure, households use this external income in favour of capital accumulation. In this case, remittances are perceived as a saving amount to use in favour of investment goods.

These results are in line with the permanent income hypothesis presented in the literature review. Households consume not only according to their current income but also by their expected income in future years. And if remittances are large relative to total expenditure, they can be perceived as an important future income. Thus, households change their expenditure behaviour in favour of capital accumulation goods only if remittances are relevant compare to total expenditure.

On the contrary, if the remittances are less relative to household total expenditure, the future expected income is zero and households do not change expenditure behaviour.

To demonstrate our hypothesis, we use surveys from AMP project undertaken by the World Bank which includes Burkina Faso, Kenya, Nigeria, Senegal and Uganda. This is an interesting case of study because surveys represent the migration issue in these countries and migration issue is different among countries. Moreover, most of the literature do not consider SSA countries where migration has become an important issue of the area.

In general, households in Kenya receive on average the higher amount of remittances, whereas households in Nigeria and Senegal present a similar pattern. Households in Uganda receive a lesser amount relative to previous countries whereas in Burkina Faso the amount of remittances on average is low compare to others countries. In absolute terms, Kenya, Nigeria, Senegal and Uganda receive most of remittances from OECD countries whereas Burkina Faso from African countries. In fact, Burkina Faso is a particular migration case, with a low level of remittances and a considerable presence of migrants from African countries.

If we observe the ratio of remittances on household total expenditure the average is 0.35 and the median is 0.24. Remittances from OECD countries are always above the average except for the case of Burkina Faso, whereas remittances from African area are above the average in Kenya, Senegal and Uganda. Remittances from Other area are above the average only in Kenya and Senegal. In all others cases the ratio is below the average.

In fact, using the first remittances measurement method we cannot always observe a significant effect of remittances on expenditure behaviour, probably in some case the number of observations is limited. And with this method, results are not always homogenous among countries. Instead, using the second remittances measurement method, it is evident that an increase of the ratio

is always positively correlated with a shift of expenditure behaviour in favour of capital accumulation. In effect, in all estimations, households in the fifth quantile distribution of the ratio shift the expenditure behaviour in favour of capital accumulation goods.

Therefore, our findings show that the way in which households perceive remittances is not only due to the origin of remittances but most from the ratio of remittances on total expenditure. For instance, households in Kenya receive most of remittances by OECD countries but African remittances present a higher ratio. Similar findings came across Senegal and Uganda where it is evident that households receive most of remittances from OECD countries but the ratio from African remittances do not strongly differ.

Probably, households that receive remittances from OECD countries are also the most richer households, consequently they perceive OECD remittances less important than households who receive African remittances.

In conclusion, we can highlight an important implication of our results on migration strategies. In fact, assuming that household would maximize the capital accumulation effect of remittances, low-skilled migrants would tend to migrate in countries where they can benefit from the expected income differentials, DCS versus DC and rural versus urban, whereas high-skilled migrants can migrate also in a similar country to benefit from an expected high-wage job.

Finally, we can conclude that our findings support the previous literature with the addition that the ratio of remittance on total expenditure explain in deeper way the expenditure behaviour in favour of capital accumulation and we reach the aim of our work to understanding when households use remittances in favour of capital accumulation.

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Table 1. Household classification according to remittances receiving

Households categories	Burkina Faso	Kenya	Nigeria	Senegal	Uganda
Households with no remittances	1,092	938	1,252	966	1,445
Households with national remittances	413	339	601	325	238
Households with international remittances	421	344	228	532	113
Households with national and international remittances	107	72	96	114	30
Total households in our sample	2,033	1,693	2,177	1,937	1,826

Note: total observation = 9,666 households.

Source: AMP survey data, World Bank

Table 2. Expenditure categories

Category	Description
Food	Basic food + protein food
- Basic food	Cereals, pulses, oilseeds, bananas, tubers, fruits, vegetables, etc. including self-consumption; gas, wood, coal
- Protein food	Meat, chicken, fish (including self-consumption)
Consumption good	Transport cost, clothing, vehicles, mobile phone cost, internet cost, computer, electronic goods, luxury goods, ceremonies
Education	Registration fees, uniforms, books and school supplies
Health	Doctor fees, lab fees, hospitalization, prescription
House	Household goods, rent, household fees, house, home improvement, mortgage
Investment	Productive assets, farming equipment, setting a business
Other	Others goods

Source: AMP survey data, World Bank

Table 3. Average budget share

Category	Burkina Faso (N=2,033)	Kenya (N=1,693)	Nigeria (N=2,177)	Senegal (N=1,937)	Uganda (N=1,826)
Food	.5655	.4563	.5355	.5234	.5555
- Basic food	.4818	.3752	.4190	.3799	.4320
- Protein food	.0837	.0811	.1165	.1435	.1235
Consumption good	.2921	.2458	.2841	.2741	.2301
Education	.0365	.0812	.0605	.0239	.1020
Health	.0551	.0357	.0264	.0372	.0323
House	.0358	.1638	.0689	.1228	.0716
Investment	.0102	.0147	.0192	.0086	.0078
Other	.0047	.0024	.0053	.0098	.0006

Note: the total of each column is equal 1

Source: AMP survey data, World Bank

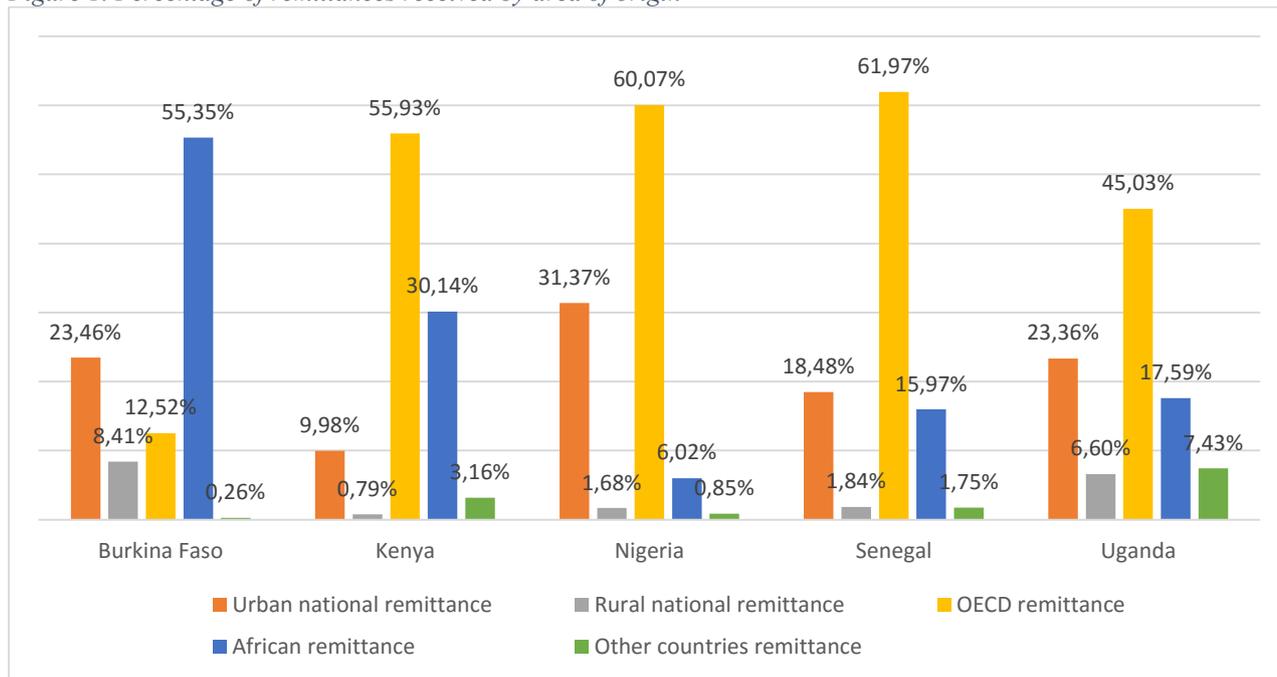
Table 4. Summary data on households' characteristics in the five countries

Variable	Burkina Faso	Kenya	Nigeria	Senegal	Uganda
household size	8.9 (5.0)	4.1 (2.2)	5.9 (3.3)	9.2 (5.7)	4.9 (2.8)
% of children (0 - 4)	.156 (.127)	.078 (.137)	.099 (.147)	.122 (.127)	.103 (.148)
% of children (5 - 15)	.326 (.171)	.192 (.221)	.234 (.214)	.247 (.178)	.262 (.230)
% of elderly (>62)	.056 (.122)	.091 (.213)	.057 (.148)	.061 (.105)	.046 (.152)
% of women (>15)	.280 (.138)	.372 (.247)	.325 (.176)	.341 (.174)	.324 (.236)
Owning agricultural land (1=yes)	.929 (.257)	.621 (.485)	.660 (.474)	.412 (.492)	.663 (.473)
HH head (1=female)	.065 (.247)	.312 (.464)	.128 (.334)	.299 (.458)	.302 (.459)
Age of the HH head (years)	49.5 (15.9)	47.9 (16.0)	49.3 (13.6)	53.0 (14.8)	42.7 (15.1)
HH head > secondary level (1=yes)	.046 (.209)	.498 (.500)	.530 (.499)	.226 (.418)	.315 (.465)
Owning house (1=yes)	.937 (.243)	.658 (.474)	.659 (.474)	.799 (.401)	.716 (.451)
% of wage workers	.525 (.232)	.450 (.322)	.405 (.246)	.349 (.231)	.436 (.291)

Note: all values are country average; standard deviations are in parentheses

Source: AMP survey data, World Bank

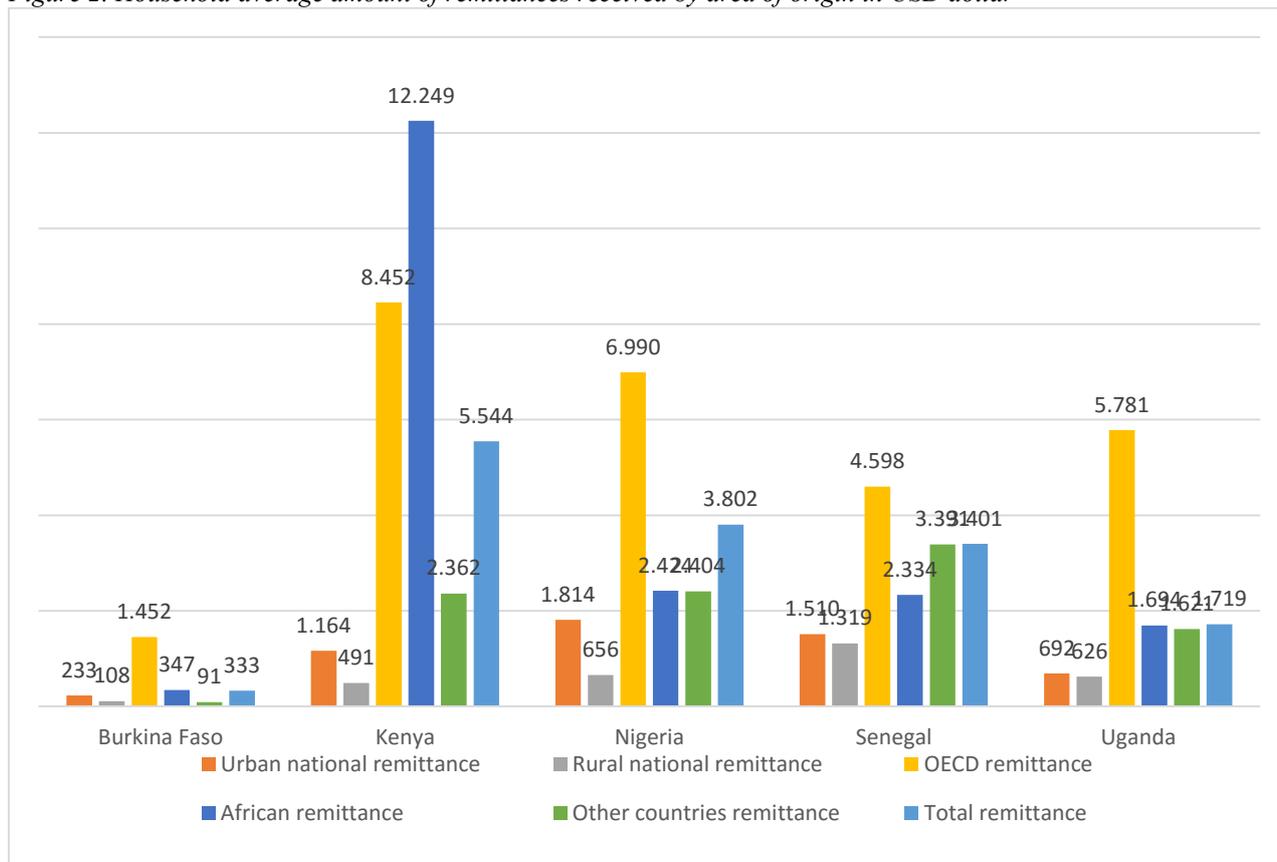
Figure 1. Percentage of remittances received by area of origin



Note: the sum of the five areas is equal 100%.

Source: AMP survey data, World Bank

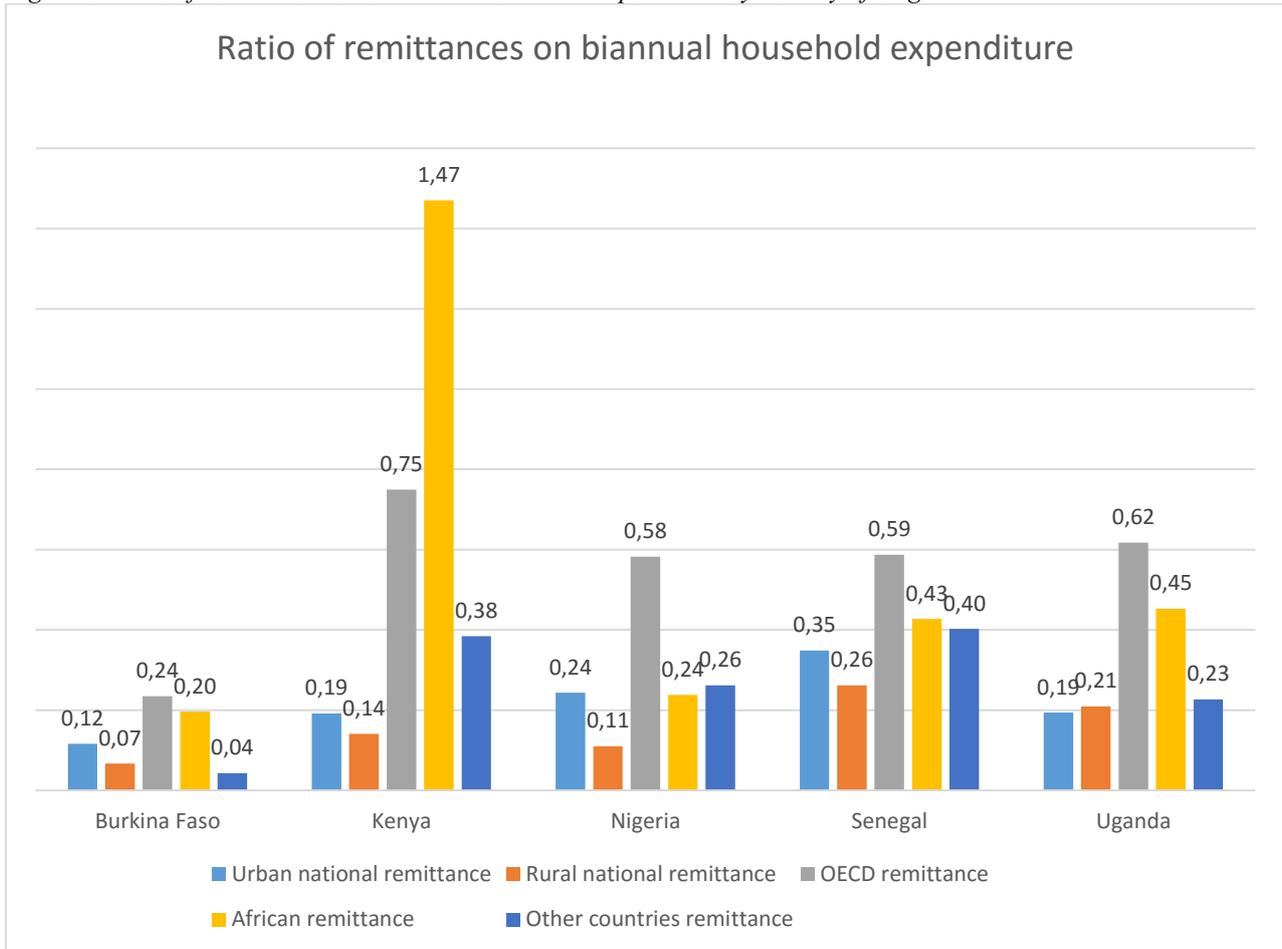
Figure 2. Household average amount of remittances received by area of origin in USD dollar



Note: to compare the five countries we use PPP convertor factors in 2009 elaborated by World Bank. Each LCU is converted in USD. Convertor factors are: Burkina Faso 228.5; Kenya 31.3; Nigeria 66.2; Senegal 246.5; Uganda 804.5. Note: Values are average remittances amount received by households from this specific country of origin, so a household can receive remittances from more areas.

Source: AMP survey data, World Bank

Figure 3. Ratio of remittances on semestral household expenditure by country of origin



Note: values are the ratio between remittances received from specific area on total expenditure of households that receive from the area.

Source: AMP survey data, World Bank

Table 5. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in Burkina Faso (first method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.057*** (0.000)	-0.045*** (0.000)	-0.012*** (0.000)	0.034*** (0.000)	-0.002 (0.363)	-0.002 (0.575)	0.024*** (0.000)	0.001 (0.477)	0.003 (0.096)	
Log National urban remittance	-0.001 (0.656)	0.000 (0.996)	-0.001 (0.198)	-0.002* (0.035)	0.001* (0.017)	0.001* (0.032)	-0.000 (0.831)	0.000 (0.605)	0.000 (0.722)	0.014** (0.001)
Log National rural remittance	0.000 (0.858)	0.001 (0.604)	-0.001 (0.316)	-0.001 (0.267)	-0.000 (0.832)	0.000 (0.836)	-0.000 (0.654)	0.001* (0.011)	0.000 (0.398)	-0.010* (0.037)
Log OECD remittance	-0.004 (0.192)	-0.003 (0.259)	-0.001 (0.518)	-0.002 (0.600)	0.001 (0.409)	0.002 (0.234)	0.001 (0.684)	0.003 (0.357)	-0.001* (0.017)	0.080*** (0.000)
Log Africa remittance	-0.000 (0.878)	-0.000 (0.704)	0.000 (0.578)	-0.000 (0.646)	0.000 (0.217)	-0.000 (0.660)	-0.000 (0.824)	0.000 (0.311)	0.000 (0.766)	0.003 (0.303)
Log Other countries remittance	-0.013* (0.033)	-0.009 (0.183)	-0.005*** (0.000)	0.003 (0.522)	0.003 (0.182)	0.008 (0.098)	0.000 (0.786)	-0.001** (0.001)	-0.000* (0.029)	0.012 (0.395)
Constant	1.134*** (0.000)	0.909*** (0.000)	0.226*** (0.000)	-0.074 (0.380)	0.120*** (0.001)	0.030 (0.433)	-0.165** (0.005)	-0.028 (0.215)	-0.018 (0.297)	12.558*** (0.000)
R-sqr_adj	0.132	0.106	0.034	0.067	0.131	0.009	0.127	0.016	-0.000	0.330

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. P-value is in parentheses. Number of observation 2,033.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 6. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in Burkina Faso (second method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.062*** (0.000)	-0.051*** (0.000)	-0.012*** (0.000)	0.034*** (0.000)	-0.001 (0.599)	0.001 (0.731)	0.025*** (0.000)	0.002 (0.406)	0.002 (0.133)	
Third quantile	0.019	0.035	-0.016**	-0.001	0.004	-0.015*	-0.013*	0.002	0.006	0.322***

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Fourth quantile	(0.327) 0.032**	(0.072) 0.039***	(0.005) -0.007	(0.953) -0.023*	(0.508) 0.005	(0.013) -0.006	(0.038) -0.006	(0.467) 0.002	(0.279) -0.003	(0.000) 0.076*
Fifth quantile	(0.003) -0.026*	(0.000) -0.029*	(0.092) 0.003	(0.011) 0.002	(0.177) 0.007	(0.132) 0.013**	(0.140) -0.002	(0.312) 0.005	(0.133) -0.000	(0.038) -0.134**
Constant	(0.021) 1.198***	(0.010) 0.984***	(0.512) 0.215***	(0.792) -0.079	(0.119) 0.109**	(0.009) -0.002	(0.691) -0.175**	(0.129) -0.038	(0.867) -0.013	(0.002) 12.666***
R-sqr_adj	(0.000) 0.139	(0.000) 0.118	(0.000) 0.036	(0.348) 0.068	(0.002) 0.129	(0.951) 0.011	(0.003) 0.129	(0.240) 0.004	(0.427) 0.002	(0.000) 0.325

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile. P-value is in parentheses. Number of observation 2,033.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 7. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in Kenya (first method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.135*** (0.000)	-0.118*** (0.000)	-0.017*** (0.000)	0.062*** (0.000)	0.016*** (0.000)	0.005** (0.002)	0.043*** (0.000)	0.007*** (0.000)	0.002 (0.087)	
Log National urban remittance	-0.003* (0.026)	-0.003* (0.021)	0.000 (0.936)	0.001 (0.461)	0.001 (0.510)	-0.000 (0.590)	0.000 (0.884)	0.001* (0.026)	0.000 (0.756)	0.010 (0.110)
Log National rural remittance	-0.001 (0.682)	0.001 (0.716)	-0.002* (0.026)	-0.002 (0.498)	0.000 (0.856)	-0.001 (0.533)	0.001 (0.664)	0.001 (0.484)	0.001 (0.412)	-0.012 (0.376)
Log OECD remittance	-0.002 (0.121)	-0.003* (0.016)	0.001 (0.086)	0.001 (0.527)	-0.000 (0.814)	0.002** (0.009)	-0.000 (0.698)	-0.000 (0.883)	0.000 (0.974)	0.056*** (0.000)
Log Africa remittance	-0.004 (0.082)	-0.003 (0.072)	-0.000 (0.692)	-0.000 (0.905)	-0.002 (0.145)	0.000 (0.985)	0.005* (0.033)	0.001 (0.282)	-0.000 (0.616)	0.044*** (0.000)
Log Other countries remittance	0.005	0.005	-0.000	0.000	-0.000	-0.000	-0.005**	-0.000	-0.000*	0.029**

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant	(0.061) 2.020***	(0.055) 1.726***	(0.963) 0.294***	(0.967) -0.365***	(0.915) -0.155***	(0.985) -0.068***	(0.003) -0.334***	(0.717) -0.081***	(0.041) -0.017	(0.009) 10.283***
R-sqr_adj	(0.000) 0.440	(0.000) 0.411	(0.000) 0.052	(0.000) 0.156	(0.000) 0.096	(0.001) 0.075	(0.000) 0.125	(0.000) 0.032	(0.082) 0.008	(0.000) 0.244

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. P-value is in parentheses. Number of observation 1,693.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 8. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in Kenya (second method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient							
Log total expenditure	-0.137*** (0.000)	-0.121*** (0.000)	-0.016*** (0.000)	0.063*** (0.000)	0.016*** (0.000)	0.007*** (0.000)	0.042*** (0.000)	0.007*** (0.001)	0.002 (0.080)	
Third quantile	0.051* (0.037)	0.059* (0.013)	-0.007 (0.467)	0.001 (0.978)	-0.017 (0.268)	-0.006 (0.632)	-0.023 (0.243)	-0.003 (0.652)	-0.002 (0.073)	0.545*** (0.000)
Fourth quantile	-0.021 (0.106)	-0.019 (0.135)	-0.003 (0.647)	-0.004 (0.731)	-0.001 (0.948)	-0.006 (0.251)	0.024* (0.048)	0.007 (0.133)	0.001 (0.674)	0.349*** (0.000)
Fifth quantile	-0.030* (0.015)	-0.034** (0.005)	0.004 (0.455)	0.009 (0.488)	0.002 (0.815)	0.012* (0.032)	-0.001 (0.889)	0.008 (0.073)	-0.000 (0.833)	0.153* (0.024)
Constant	2.039*** (0.000)	1.754*** (0.000)	0.285*** (0.000)	-0.373*** (0.000)	-0.151*** (0.000)	-0.086*** (0.000)	-0.333*** (0.000)	-0.081*** (0.001)	-0.016 (0.070)	10.247*** (0.000)
R-sqr_adj	0.441	0.412	0.050	0.157	0.097	0.074	0.123	0.029	0.005	0.218

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile. P-value is in parentheses. Number of observation 1,693.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 9. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in Nigeria (first method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.090*** (0.000)	-0.056*** (0.000)	-0.034*** (0.000)	0.033*** (0.000)	0.011*** (0.000)	-0.007*** (0.000)	0.036*** (0.000)	0.017*** (0.000)	-0.000 (0.460)	
Log National urban remittance	-0.002** (0.004)	-0.003*** (0.000)	0.001 (0.098)	0.000 (0.674)	0.001** (0.002)	0.000 (0.272)	0.000 (0.352)	0.000 (0.415)	-0.000 (0.564)	0.010** (0.007)
Log National rural remittance	-0.003 (0.146)	-0.003 (0.166)	-0.000 (0.847)	0.004* (0.026)	-0.001 (0.250)	0.001 (0.560)	-0.000 (0.739)	-0.000 (0.784)	-0.000** (0.004)	-0.002 (0.828)
Log OECD remittance	-0.002* (0.013)	-0.004*** (0.000)	0.001** (0.001)	-0.000 (0.674)	0.001 (0.152)	0.000 (0.312)	0.002* (0.028)	0.000 (0.282)	-0.000 (0.328)	0.034*** (0.000)
Log Africa remittance	-0.004* (0.012)	-0.005** (0.002)	0.000 (0.468)	0.002 (0.299)	0.000 (0.615)	0.001 (0.287)	0.001 (0.487)	0.001 (0.504)	-0.000 (0.554)	0.022** (0.004)
Log Other countries remittance	-0.007* (0.025)	-0.009*** (0.000)	0.001 (0.368)	0.002 (0.673)	0.002 (0.500)	0.002 (0.383)	0.003 (0.376)	-0.002*** (0.001)	-0.000 (0.748)	0.021 (0.347)
Constant	1.637*** (0.000)	1.113*** (0.000)	0.524*** (0.000)	-0.034 (0.633)	-0.121*** (0.000)	0.082*** (0.001)	-0.398*** (0.000)	-0.170*** (0.000)	0.004 (0.700)	12.040*** (0.000)
R-sqr_adj	0.199	0.114	0.115	0.061	0.130	0.076	0.134	0.040	0.037	0.270

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. P-value is in parentheses. Number of observation 2,177.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 10. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in Nigeria (second method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.091*** (0.000)	-0.058*** (0.000)	-0.033*** (0.000)	0.032*** (0.000)	0.012*** (0.000)	-0.006*** (0.000)	0.038*** (0.000)	0.017*** (0.000)	-0.001 (0.405)	
Third quantile	-0.024 (0.204)	-0.021 (0.279)	-0.003 (0.700)	0.028 (0.098)	0.008 (0.301)	-0.001 (0.863)	-0.006 (0.568)	-0.002 (0.867)	-0.004*** (0.000)	0.280** (0.001)
Fourth quantile	-0.033** (0.002)	-0.046*** (0.000)	0.013** (0.009)	0.011 (0.233)	0.010* (0.024)	0.006* (0.025)	0.001 (0.921)	0.005 (0.221)	-0.000 (0.919)	0.188*** (0.000)
Fifth quantile	-0.053*** (0.000)	-0.064*** (0.000)	0.011* (0.023)	0.008 (0.394)	0.016*** (0.001)	0.005 (0.134)	0.022*** (0.001)	0.004 (0.302)	-0.002 (0.185)	0.159** (0.001)
Constant	1.657*** (0.000)	1.148*** (0.000)	0.510*** (0.000)	-0.021 (0.768)	-0.127*** (0.000)	0.079*** (0.001)	-0.418*** (0.000)	-0.175*** (0.000)	0.005 (0.628)	11.962*** (0.000)
R-sqr_adj	0.201	0.116	0.115	0.061	0.131	0.077	0.136	0.040	0.038	0.251

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile. P-value is in parentheses. Number of observation 2,177.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 11. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in Senegal (first method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.082*** (0.000)	-0.068*** (0.000)	-0.013*** (0.000)	0.033*** (0.000)	0.001 (0.707)	0.005* (0.045)	0.032*** (0.000)	0.002 (0.456)	0.009*** (0.000)	
Log National urban remittance	0.001* (0.044)	0.002* (0.018)	-0.000 (0.514)	-0.001* (0.019)	0.000 (0.759)	0.001 (0.092)	-0.001 (0.142)	0.000 (0.731)	-0.000 (0.799)	-0.001 (0.852)
Log National rural remittance	0.000 (0.869)	0.000 (0.922)	0.000 (0.932)	-0.000 (0.951)	-0.000 (0.507)	0.001 (0.186)	-0.001 (0.536)	-0.000 (0.449)	-0.000 (0.777)	0.002 (0.787)
Log OECD remittance	-0.001	-0.002**	0.001	-0.000	0.000	0.001	0.000	0.000	-0.000	0.028***

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log Africa remittance	(0.079) 0.000	(0.009) 0.000	(0.227) 0.000	(0.881) -0.001	(0.100) 0.000	(0.058) -0.000	(0.887) -0.001	(0.075) 0.000	(0.607) 0.001	(0.000) 0.012**
Log Other countries remittance	(0.633) -0.002	(0.939) -0.002	(0.495) 0.000	(0.338) -0.004	(0.243) 0.002	(0.621) -0.000	(0.227) 0.004	(0.426) 0.000	(0.254) -0.000	(0.002) 0.036***
Constant	(0.505) 1.555***	(0.400) 1.251***	(0.794) 0.304***	(0.107) -0.175	(0.107) 0.025	(0.666) -0.043	(0.284) -0.234**	(0.561) -0.017	(0.297) -0.111***	(0.000) 13.283***
R-sqr_adj	0.270	0.219	0.026	0.069	0.078	0.021	0.291	0.008	0.028	0.337

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. P-value is in parentheses. Number of observation 1,937.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 12. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in Senegal (second method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.086*** (0.000)	-0.073*** (0.000)	-0.013*** (0.000)	0.034*** (0.000)	0.001 (0.510)	0.006* (0.025)	0.033*** (0.000)	0.003 (0.337)	0.009*** (0.000)	
Third quantile	0.026* (0.042)	0.021 (0.115)	0.005 (0.533)	-0.028** (0.009)	0.005 (0.091)	-0.000 (0.959)	-0.004 (0.666)	0.003 (0.566)	-0.002 (0.593)	0.312*** (0.000)
Fourth quantile	0.003 (0.749)	-0.003 (0.761)	0.006 (0.318)	-0.002 (0.848)	0.005* (0.042)	0.004 (0.369)	-0.013* (0.031)	0.005 (0.112)	-0.002 (0.303)	0.127** (0.001)
Fifth quantile	-0.009 (0.390)	-0.018 (0.070)	0.010 (0.151)	-0.009 (0.324)	0.006* (0.015)	0.006 (0.093)	0.000 (0.947)	0.003 (0.281)	0.002 (0.625)	0.137** (0.001)
Constant	1.597*** (0.000)	1.302*** (0.000)	0.295*** (0.000)	-0.186* (0.048)	0.019 (0.370)	-0.052 (0.145)	-0.244*** (0.001)	-0.024 (0.465)	-0.110*** (0.000)	13.269*** (0.000)
R-sqr_adj	0.270	0.217	0.027	0.070	0.076	0.018	0.291	0.008	0.028	0.313

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile. P-value is in parentheses. Number of observation 1,937.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 13. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in Uganda (first method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.103*** (0.000)	-0.085*** (0.000)	-0.018*** (0.000)	0.048*** (0.000)	0.023*** (0.000)	-0.004* (0.017)	0.030*** (0.000)	0.007*** (0.000)	0.000 (0.184)	
Log National urban remittance	-0.004*** (0.001)	-0.002* (0.048)	-0.002** (0.004)	0.003* (0.029)	0.000 (0.968)	0.001 (0.065)	-0.000 (0.866)	0.001 (0.068)	0.000 (0.333)	0.013** (0.009)
Log National rural remittance	-0.002 (0.405)	-0.002 (0.245)	0.001 (0.671)	-0.001 (0.689)	0.001 (0.591)	0.001 (0.344)	0.001 (0.511)	0.000 (0.968)	-0.000 (0.564)	0.013 (0.172)
Log OECD remittance	-0.003 (0.189)	-0.003 (0.120)	0.000 (0.999)	-0.001 (0.535)	0.002 (0.250)	0.000 (0.313)	0.001 (0.603)	0.000 (0.932)	-0.000 (0.886)	0.054*** (0.000)
Log Africa remittance	-0.002 (0.280)	-0.002 (0.315)	-0.000 (0.840)	-0.001 (0.486)	0.001 (0.405)	0.001 (0.087)	0.000 (0.710)	-0.000 (0.336)	-0.000 (0.910)	0.018* (0.028)
Log Other countries remittance	-0.000 (0.889)	-0.000 (0.911)	-0.000 (0.904)	-0.005** (0.009)	0.000 (0.893)	0.001 (0.138)	0.003 (0.156)	0.001 (0.519)	-0.000 (0.076)	0.032* (0.011)
Constant	1.957*** (0.000)	1.559*** (0.000)	0.398*** (0.000)	-0.402*** (0.000)	-0.264*** (0.000)	0.075*** (0.001)	-0.277*** (0.000)	-0.084*** (0.000)	-0.004 (0.257)	13.673*** (0.000)
R-sqr_adj	0.363	0.279	0.045	0.170	0.207	0.045	0.219	0.030	-0.002	0.319

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. P-value is in parentheses. Number of observation 1,826

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 14. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in Uganda (second method)

Variable	Budget share: Food Coefficient	Basic food Coefficient	Protein food Coefficient	Consumption goods Coefficient	Education Coefficient	Health Coefficient	House Coefficient	Investment Coefficient	Other Coefficient	Total expenditure Coefficient
Log total expenditure	-0.103*** (0.000)	-0.086*** (0.000)	-0.018*** (0.000)	0.047*** (0.000)	0.023*** (0.000)	-0.004* (0.017)	0.030*** (0.000)	0.007*** (0.000)	0.000 (0.166)	
Fourth quantile	-0.021 (0.718)	0.004 (0.937)	-0.026 (0.186)	-0.063 (0.117)	-0.003 (0.942)	0.035 (0.287)	0.019 (0.608)	0.034 (0.175)	-0.001 (0.105)	0.593** (0.008)
Fifth quantile	-0.047*** (0.000)	-0.033** (0.006)	-0.014* (0.036)	0.009 (0.405)	0.020* (0.038)	0.011** (0.002)	0.002 (0.755)	0.004 (0.223)	0.000 (0.752)	0.278*** (0.000)
Constant	1.963*** (0.000)	1.568*** (0.000)	0.395*** (0.000)	-0.395*** (0.000)	-0.265*** (0.000)	0.073** (0.001)	-0.286*** (0.000)	-0.085*** (0.000)	-0.004 (0.226)	13.638*** (0.000)
R-sqr_adj	0.363	0.280	0.045	0.167	0.209	0.044	0.218	0.030	-0.001	0.311

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile. P-value is in parentheses. Number of observation 1,826.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 15. Marginal expenditure behaviour estimates using Working-Leser model with the logarithm of remittances from country of origin in all five countries (first method)

Variable	Budget share: Food Coefficient	Basic food Coefficient	Protein food Coefficient	Consumption goods Coefficient	Education Coefficient	Health Coefficient	House Coefficient	Investment Coefficient	Other Coefficient	Total expenditure Coefficient
Log total expenditure	-0.105*** (0.000)	-0.085*** (0.000)	-0.019*** (0.000)	0.045*** (0.000)	0.014*** (0.000)	0.000 (0.791)	0.036*** (0.000)	0.007*** (0.000)	0.002*** (0.000)	
Log National urban remittance	-0.003*** (0.000)	-0.003*** (0.000)	-0.000 (0.568)	-0.000 (0.943)	0.001** (0.001)	0.001** (0.007)	0.000 (0.724)	0.001** (0.006)	-0.000 (0.925)	0.020*** (0.000)
Log National rural remittance	-0.003 (0.061)	-0.002 (0.176)	-0.001 (0.248)	0.001 (0.664)	-0.000 (0.990)	0.001 (0.239)	0.001 (0.508)	0.001 (0.128)	0.000 (0.458)	0.001 (0.839)
Log OECD remittance	-0.003*** (0.000)	-0.004*** (0.000)	0.001*** (0.001)	-0.000 (0.717)	0.000 (0.580)	0.001*** (0.000)	0.001 (0.095)	0.000 (0.164)	-0.000 (0.933)	0.067*** (0.000)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log Africa remittance	-0.002 (0.059)	-0.002* (0.021)	0.000 (0.486)	-0.000 (0.868)	0.000 (0.859)	0.000 (0.413)	0.001 (0.366)	0.001 (0.107)	0.000 (0.341)	0.028*** (0.000)
Log Other countries remittance	-0.000 (0.919)	-0.000 (0.915)	0.000 (0.999)	-0.003 (0.277)	0.002 (0.363)	0.001 (0.122)	0.000 (0.918)	-0.000 (0.985)	-0.000* (0.022)	0.060*** (0.000)
Dummy Kenya	0.048*** (0.000)	0.031*** (0.000)	0.017*** (0.000)	-0.094*** (0.000)	0.011** (0.005)	-0.017*** (0.000)	0.055*** (0.000)	0.002 (0.451)	-0.005** (0.001)	0.735*** (0.000)
Dummy Nigeria	0.169*** (0.000)	0.107*** (0.000)	0.062*** (0.000)	-0.074*** (0.000)	-0.021*** (0.000)	-0.025*** (0.000)	-0.048*** (0.000)	0.002 (0.390)	-0.003* (0.043)	1.059*** (0.000)
Dummy Senegal	0.081*** (0.000)	0.002 (0.794)	0.080*** (0.000)	-0.048*** (0.000)	-0.051*** (0.000)	-0.016*** (0.000)	0.033*** (0.000)	-0.003 (0.173)	0.003* (0.041)	0.636*** (0.000)
Dummy Uganda	0.068*** (0.000)	0.020** (0.005)	0.048*** (0.000)	-0.087*** (0.000)	0.048*** (0.000)	-0.016*** (0.000)	-0.005 (0.157)	-0.002 (0.308)	-0.005*** (0.000)	0.380*** (0.000)
Constant	1.208*** (0.000)	0.986*** (0.000)	0.222*** (0.000)	0.033 (0.130)	-0.058*** (0.000)	0.025** (0.002)	-0.151*** (0.000)	-0.049*** (0.000)	-0.007 (0.054)	6.858*** (0.000)
R-sqr_adj	0.291	0.235	0.096	0.111	0.174	0.054	0.243	0.027	0.014	0.436

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the logarithm of the amount by each area. For no-receiving households the value is zero. We introduce dummy variable for each country and reference is Burkina Faso. P-value is in parentheses. Number of observation 9,666.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank

Table 16. Marginal expenditure behaviour estimates using Working-Leser model with the quantile distribution of the ratio of remittances on semestral total expenditure in all five countries (second method)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Log total expenditure	-0.106*** (0.000)	-0.088*** (0.000)	-0.019*** (0.000)	0.045*** (0.000)	0.014*** (0.000)	0.001 (0.227)	0.036*** (0.000)	0.008*** (0.000)	0.002*** (0.000)	
Third quantile	-0.001 (0.954)	0.013 (0.456)	-0.014** (0.008)	0.009 (0.566)	-0.008 (0.309)	-0.007 (0.191)	-0.001 (0.946)	0.011 (0.134)	-0.003 (0.091)	0.586*** (0.000)

Budget share:	Food	Basic food	Protein food	Consumption goods	Education	Health	House	Investment	Other	Total expenditure
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Fourth quantile	-0.002 (0.690)	-0.002 (0.763)	-0.001 (0.836)	-0.009 (0.054)	0.008** (0.003)	0.001 (0.682)	-0.001 (0.683)	0.004* (0.028)	-0.000 (0.932)	0.223*** (0.000)
Fifth quantile	-0.035*** (0.000)	-0.038*** (0.000)	0.004 (0.140)	0.009 (0.058)	0.009** (0.002)	0.009*** (0.000)	0.005 (0.168)	0.004** (0.009)	-0.001 (0.542)	0.109*** (0.000)
Dummy Kenya	0.050*** (0.000)	0.034*** (0.000)	0.017*** (0.000)	-0.096*** (0.000)	0.012** (0.002)	-0.017*** (0.000)	0.055*** (0.000)	0.002 (0.348)	-0.006*** (0.001)	0.819*** (0.000)
Dummy Nigeria	0.169*** (0.000)	0.108*** (0.000)	0.061*** (0.000)	-0.075*** (0.000)	-0.020*** (0.000)	-0.025*** (0.000)	-0.049*** (0.000)	0.003 (0.269)	-0.004* (0.027)	1.121*** (0.000)
Dummy Senegal	0.084*** (0.000)	0.004 (0.523)	0.079*** (0.000)	-0.050*** (0.000)	-0.050*** (0.000)	-0.017*** (0.000)	0.033*** (0.000)	-0.002 (0.315)	0.003 (0.065)	0.744*** (0.000)
Dummy Uganda	0.069*** (0.000)	0.022** (0.003)	0.047*** (0.000)	-0.088*** (0.000)	0.049*** (0.000)	-0.017*** (0.000)	-0.006 (0.095)	-0.001 (0.405)	-0.006*** (0.000)	0.413*** (0.000)
Constant	1.221*** (0.000)	1.005*** (0.000)	0.216*** (0.000)	0.035 (0.105)	-0.060*** (0.000)	0.018* (0.022)	-0.156*** (0.000)	-0.051*** (0.000)	-0.007 (0.056)	6.786*** (0.000)
R-sqr_adj	0.292	0.237	0.095	0.112	0.174	0.054	0.242	0.026	0.014	0.420

Note: The model also includes households control variables: household size, percentage of children in the household (0-4), percentage of children in the household (5-15), percentage of elderly in the household (>62), percentage of women in the household (>15), dummy variable owing agricultural land, dummy variable for female household head, age of household head, dummy variable for household head education level if >secondary level, dummy variable owing house, percentage of workers in the household. In this estimation we measure remittances as the quantile distribution of the ratio of remittances on semestral total expenditure. Reference value is the first quantile in Burkina Faso. P-value is in parentheses. Number of observation 9,666.

* Significant at at the 0.05

** Significant at at the 0.01

*** Significant at at the 0.001

Source: AMP survey data, World Bank