Ethiopian Journal of Development Research Vol. 35, No 2 October 2013

Migrant Remittances and Expenditure Patterns of Rural Households in Ethiopia: Evidence from Ethiopian Rural Households Survey

Solomon Mosisa Gofere[1]

Abstract

This paper assesses the impact of receipt of remittances on expenditure patterns of rural households in Ethiopia. Specifically, the paper investigates the extent to which receipts of remittances affect the consumption and investment behaviours of rural households in Ethiopia. Using Ethiopian Rural Household Survey (ERHS) data, two-part model is estimated within Engle's Curve Framework. The result indicates that there is no strong link between receipt of remittances and productive investment expenditures. Remittances, however, have positive and significant impact on consumption expenditures. This implies that migration and remittances are used as a short term coping strategies and are hardly used as stepping-stone to productive investment options. This calls for strategies to attract remittance incomes to productive sectors with high potential to increase employment and production on sustainable basis.

Keywords: remittances, expenditure patterns, consumption and investments, rural households

[1] P.O. Box 34282, Addis Ababa, Ethiopia
e-mail: s.solmer64@gmail.com

Introduction

Migration is an essential element in the historical processes of social, political and economic dynamics. In particular, development and migration are intertwined in a set of complex, heterogeneous, and changing relationships in which causality is never one way (Bacwell, 2008). In other words, migration can be seen both as a cause and as an outcome of development and underdevelopment. Specifically, the contribution of migration and the accompanying remittances to the Gross Domestic Product (GDP) of developing countries can never be understated. Workers' remittances account for significant share of GDP in many developing countries, reaching as high as 23 percent of GDP in Burundi, 5.7 percent of GDP in Madagascar and 4.4 percent of GDP in Ethiopia in 2006 (IFAD, 2010). Consequently, workers' remittances have become a major source of external development finance in developing countries. Officially recorded remittances received by developing countries exceeded USD 93 Billion in 2003. The actual size of remittances, including both official figures and transfers through informal channels, are even larger. These flows were more than double the size of net official flows (which were under USD 30 Billion), and are second only to foreign direct investment (around USD 133 Billion) as a source of external finance for developing countries in the same period. This implies that development practitioners and policy researchers need to focus on this important external source of finance.

Although the number of migrants residing in the rest of the world has decreased dramatically from 2.4 percent of the total population in 1990 to 0.6 percent in 2010, it is estimated that currently more than one Million Ethiopians are migrant workers around the world (Jesse, 2012). Consequently, remittances to Ethiopia from migrant workers represent significant foreign source of income. The World Bank ranked Ethiopia to be the 8th largest remittance receiving country in sub-Saharan Africa in 2010, with an inflow of remittances reaching USD 387 Million (World Bank, 2008). Between 1977 and 2003, remittance flows have steadily grown from USD 4 Million to USD 47 Million. Afterwards, however, the growth has been sharp reaching USD 172 Million in the year 2007 (See Graph 1.1, Appendix A). Measured relatively, remittance to Ethiopia has averaged 1.3 percent of GDP over the last 30 years, according to the National Bank of

Ethiopia (NBE) data. It reported remittance inflows of about USD 600 Million in 2010. The report estimated that if the flow through the informal channel is taken in to account, the actual volume of remittance reaches above USD 1 Billion (Geda and Irving, 2011). Likewise, Berhanu et al. (2004) cited in Aredo (2005) indicated that the current flow of remittance to Ethiopia is only one-sixth of its potential and predicted it to generate a level that is higher than the current level of Official Development Assistance to Ethiopia if the potential level is realized.

The importance of remittances to the Ethiopian economy becomes vividly apparent when the remittance figures are compared to other external sources of income. Looking to the trend of export earnings, for example in 1990 it was close to double the value of remittance flows to Ethiopia, which was ETB 350 Million. However, a decade later, in 2003, remittance flows exceeded the value of export earnings. During this period, export earnings contributed only 5.6 percent to the GDP, while remittance contributed about 5.78 percent to the GDP, exceeding the export sector by more than ETB 100 Million. In the consecutive years, the value of remittances was significantly above those of export earnings and the difference in shares of these trends has widened to 3 percent in 2009. Similarly, in 2011 Ethiopia earned only about ETB 44 Billion from export of goods and services while private transfer brought home ETB 50 Billion. Likewise, in 2005 Foreign Direct Investment (FDI) contributed only about 2.41 percent to GDP while private transfers accounted for 8.08 percent of GDP. The share of FDI in GDP was only 4 percent in 2011 while remittances accounted for about 9 percent of GDP during the same period. This implies that, regardless of the emphasis placed on the role of remittances on the part of policy makers, it has become palpable that without remittance inflows, Ethiopia has to double its exports and attract close to three times the amount of the current FDI flows to the economy.

The role of remittances in an economy becomes more apparent when one considers its micro level impact. Remittances play a critical role in the receiving households' financial dynamics for practical reasons. First, remittances directly reach millions of poor households and hence, have a potential to alleviate poor economic and social conditions of receiving households. Furthermore, it is relatively stable source of income

independent of the often-dire local economy of recipient families. Moreover, unlike other financial flows to developing countries that stream through government agencies and non-governmental organizations, remittance payments are targeted precisely to the needs and desires of the receiving households. Consequently, they are hardly susceptible to abuse of corrupt officials (Bigsten *et al.*, 2005).

Remittances and Expenditure Patterns of Rural Households

It is generally recognized that migrant transfers constitute an important source of income for Ethiopian households. For many poor households remittances are mainly used as risk-reducing instruments and as an insurance against external shocks (Aredo, 2005). Bigsten *et al.* (2005) investigated the income dynamics of households in Ethiopia for the period 1994-1997 and concluded that significant number of the households relied heavily on remittances in that period. The study indicated that in 1997 remittances were primary sources of income for 22 percent of the households in the sample. Moreover, the mean share of household income provided by the remittances was 25 percent in that period. For the poorest quintile, remittances constituted almost half of the household's total income. Similarly, Beyene (2004) showed that the average remittance received over the whole sample of households is more than ETB 500 while the per capita remittance is ETB 95 (about 11 US dollar). This figure is significantly higher than the national per capita remittance received in the same year, which is only 2 USD. This reflects (at least partly) the fact that official remittance figures are underestimated, as they don't include remittance received through informal channels.

Consequently, it is assumed that the role of remittances in poverty alleviation and welfare improvements is tremendous. Beyene (2004), employing Heckman's selection method, showed that remittances have significantly reduced poverty among the sample of households he analyzed. Accordingly, even though only 14 percent of the households received remittance, poverty significantly decreased because the remittance-receiving households mainly come from the bottom consumption distribution and the amount they received is relatively large. Andersson (2012) investigated the impact of remittances on household welfare in rural Ethiopia. The result of the study shows a strong positive link between

remittances and household subjective wellbeing. Comparing with the effect of migration on subjective wellbeing, Andersson (2012) concludes that the effect of migration on welfare status of households works through the impact of remittances on welfare. This implies that the role of remittances in poverty alleviation and households' welfare improvement can never be considered trivial.

However, the impact of remittances on welfare and poverty alleviation depends on how such remittances are spent (used). In this regard, there are two different lines of argument. First, it is assumed that remittances are conspicuously consumed (Chami *et al.*, 2003). This argument assumes that households pool their income from different sources and hence there is no income source effect in spending. Consequently, remittances are typically considered as one source of income and thus they are not subject to different decision-making processes. In other words, remittances do not have a direct influence on expenditures and the only link between the two is through income effect. The second line of thought portrays completely opposite reasoning. In this case, it is argued that there are income source effects in spending because households do not pool their income from different sources (Adams *et al.*, 2008). Furthermore, it is assumed that the decision making process on how to spend a limited budget of the household can be different when households receive remittances than when they do not receive one.

Notwithstanding such theoretical contemplations and the relative importance of the issue for remittance-development nexus in Ethiopia, the relationship between receipt of remittance and expenditure patterns is little explored. Studies undertaken so far focused on the impact of remittance on welfare status of households (See Anderson, 2012). Some other studies, on the other hand, dealt with the role of remittances in poverty alleviation (See Beyene, 2004; Bigsten *et al.*, 2005). However, developmental impact of remittances depends on whether remittance income is spent on consumption or investment and investment-type goods. In other words, remittance improves the welfare of households and alleviates poverty on sustainable basis only when it is spent on investment goods. Therefore, it is imperative to know the impact of remittances on expenditure patterns of rural households in Ethiopia.

The prime objective of this study is to show how the receipt of remittances affects the spending behaviour of households. In particular, the goal of this study is to show whether remittance-receiving households spend more on investment goods than non-receiving households. This is vital question given the fact that remittances are significant external financial income in Ethiopia and they directly reach large number of poor households. Furthermore, remittances alleviate poverty on long-term bases on the condition that they are spent on investment goods (or investment type goods). Therefore, this study intends to examine the impact of remittances on the households' expenditure on consumption and investment and investment-type goods in Ethiopia. The specific objectives of this study are to:

i. Examine how the receipt of remittances affects the rural households' decision to spend on different consumption and investment goods in rural Ethiopia, and
ii. Analyze the relationship between the size of remittances and expenditure on consumption and investment goods among rural households in Ethiopia.

The Literature at a Glance

Migrants, whether local or international, send remittances back to their families for different reasons (IMF, 2005). Some may send remittances as a portfolio where remittances are considered as a self interest controlled capital transfer to diversify the migrant's savings. Portfolio motives come out of investment opportunities and saving diversification. On the other hand, migrants may also send for altruistic reasons. In this case, remittances are considered as a transaction that benefits the receivers who are left behind by the migrant. Another theory of remittances has to do with informal loan repayment (Poirine, 1997). Remittances are perceived as an informal and implicit repayment to the family at large for costs taken before departure whether to a domestic or international destination.

Regardless of the intentions for which remittance is sent, it is likely that it affects the economy positively. Capital for portfolio investment may increase the economic activity since investments are done with the intentions to generate profits and productivity, in the same manner as

foreign direct investment does. Remittances sent for altruistic purpose do not bring any demand for profits or productivity because households are free to use the remittances as they deem fit. Yet, such remittances might have significant and lasting effect in alleviating poverty and improving the welfare of the beneficiaries. In this regard, if altruism dominates remittances, it may be the case that the inflow will have smaller effect on economic activity. The effect could even become negative depending on whether capital makes the receiver less productive than the productivity the capital generates from being used (Adams *et al.*, 2008).

Chami *et al.* (2005) argue that negative relationship between remittances and economic growth could be due to two main factors: moral hazard coupled with information asymmetry. The model assumes that recipients receive remittances as an altruistic gesture. Recipient maximizes utility by selecting an optimal mix of his labour-leisure choice. Since remittances will accrue regardless of the recipients' labour efforts, they may choose more leisure and less work in order to maximize their utility. This decision could be a source of dependency syndrome associated with social transfer programs. Recipients may not desire to work hard since they have remittances as a source of income to depend on. The remitter continues to supply more and more income regardless of whether the recipients put more efforts to work or not. Such asymmetric information may lead to the decreased productivity from the side of the remittance dependent family, and as such remittances may not necessarily spur development and economic growth.

Remittances are expected to reduce poverty as they may be directly received by the poor on whom the financial transfers could have a direct and immediate impact in reducing poverty. Uruci and Gedeshi (2003), using survey of long-term legal immigrants, found that the majority of the international migrants (69.7 percent) send their money in order to meet the basic needs of the family. This makes remittances the most important sources of income for poor households with high potential to increase the household welfare and to reduce poverty. Yet, it is argued that, remittances have stronger impact on poverty reduction if they are above certain threshold. UN (2010) indicated that, with a given level of GDP, a 10 percent increase in remittances reduce the poverty headcount ratio by about

3.1 percent and poverty gap by about 3-5 percent, depending on how poverty gap is measured, only when the share of remittances in GDP is above 5 percent.

Several studies explicitly addressed the link between remittances and poverty. Adams and Page (2005) used household survey of 71 developing countries to examine the impact of international migration on poverty. Controlling for the level of income, income inequality and geographical region, they found that international remittances have a strong, statistically significant negative impact on poverty. Specifically, a 10 percent increase in the share of remittances in a country's GDP leads to a 1.6 percent decrease in people living in poverty. Similarly, Campos and Palomo (2002) found that in 2000, remittances helped reduce the national poverty rate by 4.2 percent in El Salvador as well as reduced Gini-coefficient from 0.55 to 0.53. Adams (2004) reports similar story. The study indicates that squared poverty gap measure in Guatemala declined by 19.8 percent when international remittances were included as a part of the total household income.

Likewise, a bulk of studies reported that remittances improve the welfare status of households. López (2005) found that remittances have a statistically significant impact in improving welfare in Mexico at the municipal level. Similarly, using household survey data Gustafsson and Makonnen (1993) examined the impact of remittances on poverty and welfare in rural and urban Lesotho. They found that, if the remittances were set to zero, the average per capita household consumption would fall by 32 percent and the poverty head count index would increase by 26 percent. A similar study by Taylor et al. (2005) used large household survey data from rural Mexico to analyze the impact of international remittances on welfare. The study indicated that poverty headcount and poverty gap indices would decline by 0.77 and 0.53 percents respectively with 10 percent increase in international remittances.

Many studies have also examined the relationship between remittances and savings (investments) in home countries. The result from this body of literature is mixed. Asiedu (2003) using survey data from Ghana households showed that nearly 30 percent of remittances are used for investment and construction of houses. Similarly, according to Drinkwater *et al.* (2003), if

the primary income earner remains at home and continues to maintain the household, earnings from migration are more easily diverted to savings and investment. Adams (2005a) examined the impact of remittances on the spending behaviour of household for consumption and investments, in both rural and urban Guatemala. The study compares the marginal budget share of remittance receiving and non-remittance receiving household on six consumption and investment goods. The findings show that the households receiving international remittances spend more at the margin on investment goods, especially, on housing and education, and spend less, at the margin, on food items. This is contrary to findings by Chami *et al.* (2003) that a significant proportion, and often the majority, of remittances are spent on status-oriented consumption. In 1988, by using a survey of 1,526 Egyptian migrants, McCormick and Wahba (2001) attempted to find the probability of a migrant becoming an entrepreneur or a business owner upon his/her return from working abroad. The result indicates that time spent working abroad and total amount of money saved abroad, have positive and significant effect on the likelihood of migrants becoming entrepreneurs on their return to the home country.

Conceptual Framework and Empirical Model

A popular framework used to trace the relationship between expenditure pattern and income of a given household is the Engle's Curve. This is a function describing how a consumer's expenditure on some good or service relates to the consumer's total resources and a vector of other characteristics of the consumer, such as age and household composition, holding prices fixed (Lewbel, 2006). The goods are typically aggregate commodities such as total food, clothing, or transportation, consumed over some weeks or months, rather than discrete purchases.

It provides a framework to test 'Engel's Law' that poorer households devote a higher share of total expenditure to food. It can also be used to calculate a good's income elasticity, which is roughly the percent change in demand that results from a one percent change in income (expenditure) of the household.

Although several empirical studies followed the original specifications of Engel's curve (See Ogburn, 1919), several other functional forms have been proposed since its introduction to economic analysis (Castaldo, 2007). Allen

and Bowley (1935) cited in Castaldo (2007) firmly connected the specification to utility theory and estimated linear Engel curves on data sets from a range of countries. A rather popular form that is consistent with household utility-maximization is, however, provided by Working-Leser specification (Working, 1943; Leser, 1963) which relates budget shares linearly to the logarithm of total household expenditure as in the following structure.

$$w_{ij} = \alpha_i + \beta_i ln x_j + \gamma_i \pi_{ij} + \varepsilon_{ij} \quad (1)$$

Where w_{ij} is the budget share of expenditure category i by household j, x_j is total household expenditures (total income); the term π_j is a vector of household characteristics that may affect expenditure behaviours; α_i, β_i and $\gamma_i$are unknown parameters requiring estimation and relates to household and other characteristics and ε_{ij} is an error term.

Estimates from the Engle curve depends on variety of commodity and consumer specific factors. Aggregation level across goods affects Engel curve estimates (Lewbel, 2006). Narrowly defined goods vary erratically across consumers and over time, while Engel curves based on broad aggregates like food are affected by variation in the mix of goods purchased. For instance, the aggregate of necessity goods include inferior goods like cabbage and luxuries like caviar, which may have very different Engel curve shapes (Lewbel, 2006). Similarly, Engel curves become empirically complicated with unobserved variations in the quality of goods purchased, and violations of the law of one price. When price or quality variations are unobserved, their effects may correlate with those of income and other household characteristics leading to erroneous conclusions.

For the purpose of this study, two modifications are introduced on Working-Laser specification. First, instead of using budget shares of expenditure categories, expenditure levels are modelled. This is because the empirical strategy adopted in this study requires a lognormal model, which is less practical with budget shares specification. Furthermore, since we are not interested in income elasticity of expenditure categories, modelling

expenditure levels instead of budget shares does not have significant impact on interpretations placed on the parameters. Second, the basic Working-Leser model would be extended to include other variables assumed to affect the amount of income allocated to different types of commodities. In particular, the Working-Laser model is augmented by both domestic and international migrant remittances to account for the potential impact of this transitory income on the spending behaviours of the households. Furthermore, the model is estimated with region dummies to take the cultural and social differences that may affect expenditure patterns in to account. A general specification of the model for our particular purpose, therefore, takes the following form:

$$e_{ij} = \alpha_i + \beta_i x_j + \gamma_i \pi_j + \rho_i R_j + \varepsilon_{ij} \qquad (2)$$

Where e_{ij} is expenditures corresponding to household j and commodity group i, R_j captures the amount of remittance income, and other variables are as defined before.

The dependent variable e_{ij} is unobservable, but has an observable realization of one, if it takes on a positive value, and zero otherwise.

The above empirical model is an equation system with dependent variable censored by latent variable. Estimating a censored system of equations is not an easy task and poses two major problems. First, as it is common in most cross-section surveys, there are significant numbers of households with zero expenditure on certain goods (Cameron and Trivedi, 2005). This could be either because of infrequency of purchase or abstention due to individual or household unobservable characteristics that prevents it from participating in a given market (selection model) or corner solution, individuals and household decide not to purchase a particular item because of active budget constraints (Rivera and Gonzalez, 2009). In such cases, estimating a linear regression involves additional computational complications (Cameron and Trivedi, 2009). In particular, OLS will not yield consistent parameter estimates because the censored sample is not

representative of the population. Moreover, statistical inference on the estimated parameters of the model involves significant extensions of the standard theory. Second, the distribution of the expenditure data is asymmetric because of the large number of observations with low values. In such cases the distribution is highly skewed with thick tail on the right. However, standard estimation techniques assume normally distributed error terms and hence inferences based on parameter estimates from such data are invalid.

Tobit model is popular empirical model used for censored data. Yet, Tobit model estimation makes strong assumption that the same probability mechanism generates both zero and positive expenditures (Cameron and Trivedi, 2005). In reality, however, the mechanism that determines zero and non-zero expenditures may not be the same as the mechanism that determines the amount of positive expenditures. Consequently, it is more flexible to allow for the possibility that the zero and positive values are generated by different mechanisms. Numerous applications have shown that an alternative model, the two-part model or the double hurdle model, can provide a better fit by relaxing the Tobit model assumptions. Furthermore, unlike Tobit model, neither the homoskedasticty nor the normality assumption is needed for consistency of the hurdle model estimators. Therefore, this study adopts two-part modelling technique because it separates the mechanisms that generate zero and positive expenditures, on top of its parsimony, as it does not impose stringent conditions for consistency.

The first part of two-part model is a binary outcome equation that models the probability of positive expenditures, $Pr(e > 0)$ using any of the binary outcome models. The second part on the other hand uses linear regression to model $E(lne|e > 0)$. Therefore the two parts are assumed to be independent and usually address two independent questions. Let e denote expenditures and define a binary indicator, d, of positive expenditures such that $d = 1$ if $e > 0$ and $d = 0$ if $e = 0$. When $e = 0$, we observe only $Pr(d = 0)$. For those with $e > 0$, let $f(y/d = 1)$ be the conditional density of e. The two-part model for e is then given by:

$$f(e|x) = \begin{cases} \Pr(d = 0|x) & if\ e = 0 \\ \Pr(d = 1|x) f(y|d = 1, x) & if\ e > 0 \end{cases} \quad (3)$$

The first part is usually estimated by Probit or Logit model. The result from this model identifies factors that determine the probability of positive expenditures on a given commodity. The lognormal model, which is estimated by simple Ordinary Least Squares (OLS), on the other hand, traces the relationship between expenditure level and household characteristics such as income and assets. The same regressors can appear in both parts of the model, yet this can be relaxed if there is an obvious exclusion restriction.

Data Sources and Descriptions

The data set used to test the impacts of remittance receipt on expenditure patterns of rural households in this study comes from Ethiopian Rural Household Survey (ERHS). These data were collected by the Economics Department at Addis Ababa University, Centre for the Study of African Economies (CSAE) at the University of Oxford and the International Food Policy Research Institute (IFPRI). The sample size is close to 1,480 rural households in 15 Ethiopian villages across four major regions of the country: Tigray, Oromia, Amhara, and Southern Nations and Nationalities and People's (SNNP). It is argued that, although it is not nationally representative, it could be considered broadly representative of households in non-pastoralist farming systems. The shares within the sample were broadly consistent with the population shares in the three main sedentary farming systems in the country. Furthermore, sample size in each village was chosen so as to approximate a self-weighting sample (Dercon *et al.*, 2005). Although the surveys were conducted for seven rounds, this study uses the latest round (seventh round - 2009) of the data set to estimate the empirical model specified above. This is because the significance of remittance as source income is a recent phenomenon in Ethiopia. This is also evident from the other rounds of the survey, which indicates that less than 5 percent of the households in the sample received remittances.

Since the focus of the present research is on the impact of remittances on household expenditure behaviour, the units of interest are households. The key dependent variables of interest for our empirical analysis are six broad

categories of expenditure items defined as food, non-food, health, education, durables, and agricultural expenditures. The expenditure on food was collected by means of a 14-day diary. This includes daily purchased products and food eaten outside home. On the other hand, the non-food spending includes numerous products and services collected for the previous four months. Similarly, education, health and durable expenditures were collected by means of four months diary and scaled up to obtain an annual approximation. Agricultural expenditures were collected with reference to the current and immediate previous season. The expenditure categories that are used for the analysis are described in the table below.

Table 1. Description of Items in Consumption and Investment Expenditure Categories

Expenditure categories	Description of items
Food	Purchased food items and produced at home, food eaten outside home and other related
Non-food	Clothing and personal care, house cleaning, transport, entertainment and hobbies, other products and services
Education	School fees, other educational expenses (exercise books, pens, pencils)
Health	Modern medical treatment and medicines, traditional medicine and healers and other health related expenses
Savings, investments and durables	Savings and credit scheme, *Equb* payment, contributions to *Iddir*, labour cost (salary), repair and maintenance, building materials, kitchen equipment (cooking pots and others), furniture, electric fee and related
Agricultural	Agricultural inputs: fertilizers, improved seeds, pesticides and insecticides, rents for oxen, labour costs and other related

Source: Compiled from ERHS (2009) data.

Similarly, a set of other variables capturing the characteristics of household head and the household as a unit were constructed. These include age of the household, highest level of education attained by the household head,

household size, primary activity in which the household is engaged, land holding size of the household, total income of the household, and total assets of the household. To capture the difference in spending behaviours related to culture and production practices, region dummies are included in the estimation. The key variable of the study, remittances are defined as money received by the household members in the past 12 months in the form of cash or in kind from someone who did not live in the household. Although, receipt of money could take the form of remittance, gift, inheritance, donation/aid and other transfers, only receipts which correspond to transfers from relatives and friends were considered for the analysis. Despite the fact that the survey provides detailed data on socio-demographic characteristics and households' income and expenditures, it is not a specialized survey of remittances or migration. Consequently, the survey does not provide comprehensive data on migrant characteristics and country of destination.

Estimation Results and Discussions

To address the research question of this study, we employed both parametric and non-parametric approaches. As a prelude to the estimation results from the parametric and non-parametric estimation, this study has calculated some descriptive test statistic. Table 2 below shows characteristics of households included in the sample. The result indicates that out of 1,480 sample households in this study, some 363 of them received either domestic or international remittances during the year under consideration. This amounts to 23.7 percent of the total households, indicating that significant number of rural households receive remittances either in cash or in kind. These households received remittance amounting 551 ETB on average during the period under study. Consequently, it is reasonable to conclude that significant number of rural households receive significant amount of remittances each year. It is also clear from the result that remittance receiving households have higher income levels than non-receiving households, even without the remittance income. Another notable difference between the two groups is the land holding size and agricultural participation rate. The result indicates that remittance-receiving households

have lower land holding size and only 64 percent of them rely on agriculture as their main livelihood activity.

Table 2. Descriptive Statistics of Quantitative Variables

Variables	All Sample	Non-Receiving	Receiving
Age of Household Head	53	52	55
Education Level of Household Head	1.876	1.863	1.921
Household Size	4.595	4.678	4.323
Old and Young Members	0.838	0.838	0.837
Primary Activity: Agriculture	0.724	0.748	0.645
Land Holding Size	2.037	2.050	1.993
Food Expenditures	0.615	0.610	0.680
Non-Food Expenditures	0.181	0.138	0.184
Education Expenditures	0.015	0.016	0.009
Health Expenditures	0.035	0.034	0.040
Saving, Invest and Durables Expend	0.047	0.046	0.061
Agricultural Expenditures	0.108	0.110	0.072
Total Remittance	128	0	551
Total Income	4476	4028	5970
Sample Size	1480	1117	363

Source: Computed from ERHS (2009) data.

Table 2 also shows the percentage of households' income that is spent on different categories of commodities. The results indicate that households spend more than 60 percent of their income on food items. But, remittance receiving households spend 7 percent more on food items than non-receiving households. There are two possible explanations for this. First, although it is too early to conclude, it is possible to expect remittance

receiving households to spend more on consumption goods than non-receiving households. Second, this result could also possibly be linked to the fact that remittance-receiving households are less agriculture dependent and hence, significant numbers of these households are net-food buyers. Similarly, remittance-receiving households spend 5 percent more on non-food consumption items than non-receiving households. On the other hand, remittance-receiving households spend close to 4 percent and 1 percent less on agricultural and education expenditures respectively than non-receiving households.

In fact, it is not appealing to conclude that the foregoing results are robust. The descriptive (mean) analysis does not show the robustness of the difference in spending patterns of receiving and non-receiving households. However, it is possible to assess the significance of the differences between a sample mean, and (perhaps hypothetical) 'true' mean, or between two sample means, using t-statistic calculated as part of the t-test. Table 3 below shows the results of mean difference tests. The table shows the mean shares of expenditure categories for both receiving and non receiving households. It also presents the difference between the two means and the probability values for t-tests of null hypothesis of equal means in expenditure shares of remittance receiving and non-receiving households. The results indicate that households that receive remittances spend 7 percentage points more on food items than those households that do not receive any form of remittances, and that is statistically significant at 5 percent. Similarly, receiving households spend 2 percentage points more on non-food items than non-receiving households and the difference is statistically significant.

On the other hand, households that receive remittances spend 4 percentage points less on agricultural inputs than those households that do not receive remittances. This result is commensurate with the fact that remittance receiving households have lower land holding size and agriculture is the main livelihood activity for only 64 percent of the households. The mean difference tests also indicate that education, health and durables expenditure patterns of households in receipt of remittance are not significantly different from those households that do not receive remittances. These results, in sum, indicate that there is an association between the receipt of remittances and spending patterns of rural households across selected commodities.

Table 3. Mean Difference of Test Results

	Expenditure Categories					
Status of HH	Food	Non-Food	Education	Health	Durables	Agriculture
Non-Receiving	0.61	0.14	0.02	0.03	0.05	0.11
Receiving	0.68	0.18	0.01	0.04	0.06	0.07
Difference	-0.07	-0.04	0.01	-0.01	-0.01	0.04
Pr(|T|>|t|)	0.01	0.01	0.10	0.45	0.23	0.00
t-statistic	-2.7523**	-2.6646**	1.65	-0.76	-1.19	2.9904***

Source: Computed from ERHS (2009) data.

The above discussion indicates that there is correlation between receipt of remittance and spending patterns of rural households. However, this doesn't prove that there is causation between the receipt of remittance and spending behaviours of households. Table 4 and Table 5 below report the estimation results of two-part model. The model includes a variety of other control variables in addition to standard variables and variables we are interested in. The diagnostic tests indicate that the model fits the data well. The summation of log-likelihoods from the two parts is significantly greater than Tobit model log-likelihood, implying that two-part model is appropriate. Although none of homoskedasticity's assumptions and normally distributed errors are required for consistency of two-part model, diagnostic tests indicate that the errors are white noise. Furthermore, although migration and remittances are argued to be endogenous in similar literature, the Durbin-Wu-Hausman test for endogeneity of remittances finds residuals from a reduced regression to be insignificant in the main regression, indicating that remittances are exogenous.

The result from Table 4 shows whether the probability of positive expenditure changes with household characteristics, model variables and receipt of remittances. It is clear from the table that education level of household head increases the probability of positive spending on education and health and does not increase the probability of positive spending on other categories. Similarly, household size increases the probability of

positive spending on all expenditure categories except durable items. It is also important to note that land size and assets increase the likelihood of positive expenditure on agricultural inputs. On the other hand, availability of loan from any source increases the probability of positive expenditures on investment goods but it does not increase the probability of positive expenditures on consumption items.

Remittance increases the probability of positive spending on non-food, education, health and durable items. In particular, one percent increase in the amount of remittance received leads to a 5 percent increase in the probability of spending on non-food items among the receiving households. Similarly, one percent increase in remittance leads to 3 percent increase in the probability of positive expenditures on education and health. Furthermore, households that receive remittances tend to spend on durable items than those households that do not receive remittances. On the other hand, receipt of remittances doesn't significantly affect the probability of positive expenditures on food items. This result is commensurate with the fact that food items are necessity goods and hence the likelihood of spending on such items doesn't vary with transitory income such as remittances. Similarly, receipt of remittances doesn't affect the probability of positive expenditures on agricultural inputs.

Table 4. Probit Regression Results

	Expenditure Categories					
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Food	Non-Food	Education	Health	Durables	Agriculture
Age	0.0060 [0.006]	-0.0032 [0.004]	0.0034 [0.003]	0.0026 [0.002]	-0.0077*** [0.003]	-0.0036 [0.003]
Sex	0.2084 [0.259]	-0.0748 [0.164]	0.3247*** [0.112]	0.0637 [0.102]	0.1731 [0.106]	-0.0622 [0.120]
Education	-0.0562 [0.188]	0.1641 [0.113]	0.1995*** [0.068]	0.0992* [0.060]	0.0127 [0.061]	0.0210 [0.077]
HHSIZE	0.2852*** [0.071]	0.0863** [0.035]	0.2473*** [0.021]	0.0531*** [0.017]	0.0203 [0.017]	0.0613*** [0.022]
Land size	-0.0006 [0.041]	0.0215 [0.037]	0.0415** [0.019]	0.0413*** [0.015]	0.0353** [0.014]	0.1690*** [0.028]
Remittances	-0.0483 [0.041]	0.0501* [0.030]	0.0383** [0.018]	0.0388** [0.016]	0.0460*** [0.016]	0.0242 [0.019]
Assets	0.1313 [0.101]	0.3405*** [0.061]	0.1678*** [0.039]	0.0533 [0.034]	0.2687*** [0.036]	0.1827*** [0.042]
Income	0.0339 [0.027]	0.0623*** [0.018]	0.0177 [0.011]	-0.0107 [0.010]	-0.0060 [0.010]	0.0234* [0.013]
Loan	0.1404 [0.206]	0.0462 [0.126]	0.3598*** [0.081]	0.1939*** [0.072]	0.2863*** [0.075]	0.2670*** [0.086]
LL (1)	-92.73	-282.87	-740.13	-946.50	-886.99	-610.32
Observations	1,469	1,469	1,469	1,469	1,469	1,469

Values in brackets are standard errors.*** **p<0.01, ** p<0.05, * p<0.1**

The result from the probit model implies that receipt of remittances increases the positive probability of spending on some items. Yet, it is never conclusive whether remittances increase expenditure on consumption good, investment goods or both. However, the result from the second part of the two-part model conveys more informative results. The lognormal model traces the relationship between the amount of remittances received and expenditures on different consumption and investment (investment type) goods, for those observations with positive expenditures on respective goods. The diagnostic tests of the model indicate that the model fits the data well. The log likelihood values of the two parts model (which is the sum of the log likelihoods of the two model) is considerably higher than the log likelihood values of Tobit, which is an alternative model in similar literature. Furthermore, the predictive power of the model has also improved over an alternative model, Tobit model. The predicted expenditure from the second step closely resembles the actual expenditure values on all expenditure items. Furthermore, included explanatory variables explain a reasonable proportion of variation in the dependent variables, expenditures on different items, as can be seen from the R-squared.

Table 5. Lognormal Regression Results

	Expenditure Categories					
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Food	Non-Food	Education	Health	Durables	Agriculture
Age	-0.0003	-0.0023	0.0065**	0.0024	-0.0000	0.0015
	[0.002]	[0.002]	[0.003]	[0.003]	[0.005]	[0.003]
Sex	-0.1146*	-0.2264**	0.1586	-0.0544	-0.1423	0.1479
	[0.066]	[0.092]	[0.117]	[0.137]	[0.187]	[0.119]
Education	0.0665*	-0.0107	0.1790***	-0.0594	-0.1237	0.1449**
	[0.037]	[0.053]	[0.069]	[0.076]	[0.112]	[0.058]
HHSIZE	0.0623***	0.0686***	0.1230***	0.0391*	-0.0011	0.0739***
	[0.011]	[0.014]	[0.021]	[0.022]	[0.032]	[0.016]
Land size	-0.0062	0.0481***	0.0481***	0.0284	0.0277	0.1045***
	[0.009]	[0.013]	[0.018]	[0.019]	[0.027]	[0.025]
Remittances	0.0286***	0.0281**	-0.0180	0.0206	0.0466	0.0054
	[0.010]	[0.014]	[0.016]	[0.021]	[0.029]	[0.015]
Assets	0.2404***	0.4562***	0.2708***	0.2839***	0.4892***	0.4682***
	[0.023]	[0.030]	[0.039]	[0.049]	[0.068]	[0.038]
Income	0.0045	0.0265***	0.0150	-0.0309**	0.0242	0.0339***
	[0.006]	[0.008]	[0.011]	[0.014]	[0.020]	[0.011]
Loan	0.2529***	0.1938***	0.0754	0.1258	0.0242	0.1263
	[0.047]	[0.063]	[0.079]	[0.104]	[0.151]	[0.078]
LL (2)	-1741.17	-2004.58	-1557.90	-1259.19	-1323.06	-1783.91
LL(1) +LL(2)	-1833.91	-2287.45	-2298.03	-2205.70	-2210.06	-2394.24
LL(Tobit)	-2079.11	-2981.26	-2511.84	-2619.42	-2427.43	-2985.58
Expenditure	4467.92	1411.08	152.89	331.70	923.48	957.41
Expendhat2step	4725.78	1651.99	104.40	301.53	681.110	1289.51
Observations	1,442	1,365	1,005	773	684	1,133
R-squared	0.32	0.40	0.23	0.22	0.19	0.44

Values in brackets are robust standard errors.*** p<0.01, ** p<0.05, * p<0.1

The lognormal estimation results imply that household characteristics such as education level of the household head increases expenditures on investment or investment-type goods such as education and agricultural inputs and some consumption items. Similarly, household size significantly increases expenditure on both consumption and investment items, except durable goods. More obviously, land holding size increases investment expenditures on agricultural inputs. Increase in income increases expenditures on some items such as non-food items and agricultural inputs, but decreases spending on others, such as health services. This might be the case because wealthier families (and hence healthier families) spend less on health services. Furthermore, asset levels consistently and significantly increase spending on all items. Contrary to our expectation and the results from part one, availability of loans doesn't increase the expenditures on investment type goods, but increases consumption expenditures.

The estimated coefficient corresponding to remittances shows that remittances have significant effects on the ways households decide to allocate their resources. Increase in remittances increases the shares devoted to food items and the estimated coefficient is significant at conventional level of significance. Specifically, one percent increase in remittances increases the amount devoted to food items by two percents. Likewise, one percent increase in the amount of remittances received by the households increases the amount of income spent on non-food items by more than 2 percent. This implies that receipt of remittances significantly and positively affects consumption items, which increases the welfare of households in the short-run, but not in the long-run. On the other hand, the amount of remittance received doesn't affect the amount allocated to human capital development goods (education and health). Similarly, receipt of remittance doesn't affect spending on capital investment (durables and agricultural inputs) goods. This implies that rural households tend to spend remittances on consumption items such as food and non-food items than on investment (or investment type) goods. In other words, remittances are used to maintain the short run consumption needs of households.

The econometric results confirm the findings of our descriptive analysis. Remittances increase the households' budget shares of expenditure on consumption goods, but don't increase the shares of income spent on

investment goods. In order to see how sensitive the results are, the empirical model was estimated with Tobit model. The results are presented in Appendix B. The coefficients on remittance indicate that household expenditures on food and non-food items significantly increase with remittances. In contrast to the results above, Tobit results convey that receipt of remittances also increases expenditures on health and durable goods. Yet, it is important that these results are interpreted with caution. The consistency of Tobit depends on whether errors are white noise or not. However, we have seen that a limited number of households have positive spending on these items and the distribution of expenditure data is right skewed with fat tail.

Conclusions

In this study, we have tried to explore the relationship between receipt of remittances and the spending behaviours of rural households in Ethiopia. Addressing this issue is categorically important in light of the fact that developmental impacts of remittances depends on whether remittance income is spent on consumption or investment goods. In doing so, the study estimated two-part model in Engle's curve framework using the final round of Ethiopian Rural Household Survey (2009). To augment the results from the parametric model, the study has analyzed the data using some non-parametric tools such as mean difference tests. From the foregoing analysis one can conclude the following points.

First, the study has shown that significant number of households receive significant amount of remittances in rural Ethiopia. In particular, it has been shown that close to a quarter of rural households surveyed have received remittances, in the form of money or goods, either from domestic or international migrants. This result clearly shows that significant number of households receive remittances each year, even compared to countries with high migration incidence such as Mexico and Albania where less than 20 percent of households receive remittances (Rivera and Gozalez, 2009; Castaldo, 2007). Furthermore, the average amount of remittances received by each household is also significant even compared to their total annual income. This augments the fact that remittances to Ethiopia have become the most important external source of income.

Second, this study has shown that remittance-receiving households spend more on consumption goods than those households with no remittance income. In particular, we have shown that remittance-receiving households spend more on food and non-food items than those households with no remittance income. The results from parametric analysis also confirm that remittance income significantly increases expenditures on food and non-food items. Consequently, one can fairly conclude that remittances are conspicuously consumed and only meant to maintain consumption needs of rural households. This as it appears is daunting given the fact that investment on food and non-food items has weak potential in poverty alleviation on sustainable basis.

Third, it has also been shown that there is no evidence of higher expenditure on investment goods and/or investment type goods by the remittance receiving households. The non-parametric results indicated that there is no significant difference between the mean expenditures on human capital development goods and agricultural inputs of receiving households and non-receiving households. Similarly, the estimation results from econometric model revealed that remittances do not significantly affect spending on education, health and agricultural inputs. The bottom line, therefore, is that rural households in Ethiopia tend to use remittances to maintain their basic necessities instead of spending it on investment-type goods. .

Hence, given the importance of this huge financial flow in poverty alleviation, it is recommended that concerned government agencies need a carefully tailored strategies to re-direct remittance income to productive investment sectors with high potential to increase employment and production. In doing so, concerned bodies can promote financial literacy and remittance based investments such as remittance bonds. It is also recommended that a responsible government agency provide vocational training and disseminate information pertaining to rural investment opportunities to encourage rural households to use remittance income effectively.

References

Alemayehu Geda and J. Irving. 2011. Remittance Markets in Africa. Ethiopia. In S. Mohapatra and D. Rath (eds). Washington DC, The World Bank.

Adams, R. 2003. International Migration, Remittances and the Brain Drain: A Study of 24 Labour Exporting Countries, World Bank Policy Research Working Paper, No. 3069, Washington, DC, World Bank.

Adams, R. 2005. Remittances, Household Expenditure and Investment in Guatemala, World Bank Policy Research Working Paper, No. 3532, Washington, DC, World Bank.

Adams, R. and Page, J. 2005. Do International Migration and Remittances Reduce Poverty in Developing Countries. *World Development*, 33(10): 1645-1669.

Adams, R., Richard, A. and Page, J. 2008. Remittances, Consumption and Investment in Ghana. Edited by World Bank. Washington, DC: World Bank.

Adepoju, A. 2008. Migration and Social Policy in sub-Saharan Africa, Draft Working Document, International Organization for Migration.

Andersson, L. 2012. Migration, Remittances and Household Welfare in Ethiopia, First Draft, University of Gothenburg, Department of Economics.

Asiedu, A. B. 2003. Some Benefits of Migrants Return Visits to Ghana, Paper Presented on the International Workshop 'Migration and Poverty in West Africa', Sussex Centre for Migration Research, University of Sussex, 13-14 March.

Bakewell, O. 2008. Keeping Them in Their Place: The Ambivalent Relationship between Development and Migration in Africa. *Third World Quarterly*, 29 (7): 1341-58.

Beyene Berhe. 2011. The Effect of International Remittances on Poverty and Inequality in Ethiopia, Centre of Equality, Social Organization, and Performance (ESOP), Department of Economics, at the University of Oslo.

Bigsten, A. Abebe Shimeles and Bereket Kebede. 2005. Poverty Income Distribution and Labour Markets in Ethiopia, Nordiska Africa Institutet.

Cameron C. and P. Trivedi. 2005. Microeconometrics: Methods and Applications. Cambridge: Cambridge University Press.

Campos, R, and Palomo, L. 2002. Invirtamos en educación para Desafiar el Crecimiento económico y la Pobreza, Fundación Salvadoreña para el Desarrollo económico y Social, San Salvador.

Castaldo, A., J. Litchfield and B. Reilly. 2007. Who is Most Likely to Migrate from Albania? Evidence from the Albania Living Standards Measurement Survey, Forthcoming in Eastern European Economics.

Chami, R., C. Fullenkamp and S. Jahjah. 2003. Are Immigrant Remittance Flows a Source of Capital for Development? International Monetary Fund (IMF), Working Paper No. 03/189. Washington DC.

Dejene Aredo. 2005. Migrant Remittances, Shocks and Poverty in Urban Ethiopia: An Analysis of Micro Level Panel Data. First Draft, Addis Ababa University.

Dercon, S., J. Hoddinott, and T. Woldehanna. 2005. Shocks and Consumption in 15 Ethiopian Villages, 1999-2004. *Journal of African Economies*, 14: 559–585.

Drinkwater, S., P. Levine and E. Lotti. 2003. The Labour Market Effects of Remittances, FLOWENLA Discussion Paper No. 6, Hamburg Institute of International Economics, Hamburg.

Gustafsson B. and N. Makonnen. 1993. Poverty and Remittances in Lesotho. *Journal of African Economies*, 2(1): 49-73.

International Monetary Fund. 2005. Two Current Issues Facing Developing Countries, in World Economic Outlook, Washington DC.

Jesse S. 2012. Ethiopian Migration Profiles Centre for Migration and Refugee Studies.

Leser, C. 1963. Forms of Engel Functions. *Econometrica,* 31(4): 694-703.

Lewbel, A. 2006. 'Engel Curves' Entry for The New Palgrave Dictionary of Economics, 2nd Edition, Boston College.

Lopez, C E. 2005. Globalization, Migration and Development: The Role of Mexican Remittances, Mimeo.

McCormick, B. and J. Wahba. 2001. Overseas Experience, Savings and Entrepreneurship amongst Return Migrants to LDCs. *Scottish Journal of Political Economy,* 48(2):164-78.

Poirine, B. 1997. A Theory of Remittances as an Implicit Family Loan Arrangement. *World Development*, 25(4): 589–611.

Rivera, M. and Gonzalez, A. 2009. Effects of Remittances on Household Expenditure Patterns of Rural Mexico, Hewlett Foundation. The Macmillan Centre at Yale University.

Taylor, E., J. Mora, R. Adams, and A. Lopez-Feldman. 2005. Remittances, Inequality and Poverty: Evidence from Rural Mexico, Working Paper No. 05-003, Giannini Foundation for Agricultural Economics.

Uruçi, E. and I. Gedeshi. 2003. Remittances Management in Albania, Working Papers No. 5 Rome: Centro Studi di Politica Internazionale.

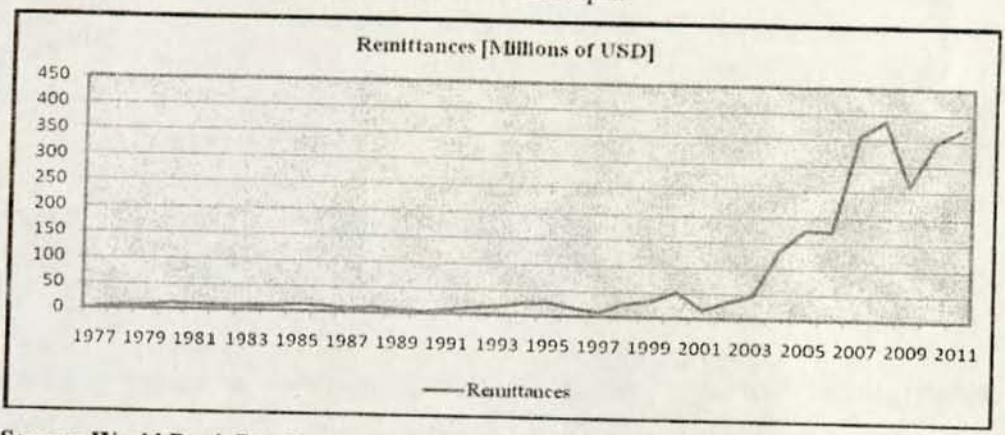
Working, H. 1943. Statistical Laws of Family Expenditure. *Journal of the American Statistical Association*, 38(221): 43-56.

World Bank. 2008. Migration and Remittances Fact Book 2008, Second Edition. The World Bank. Washington DC.

Appendices:

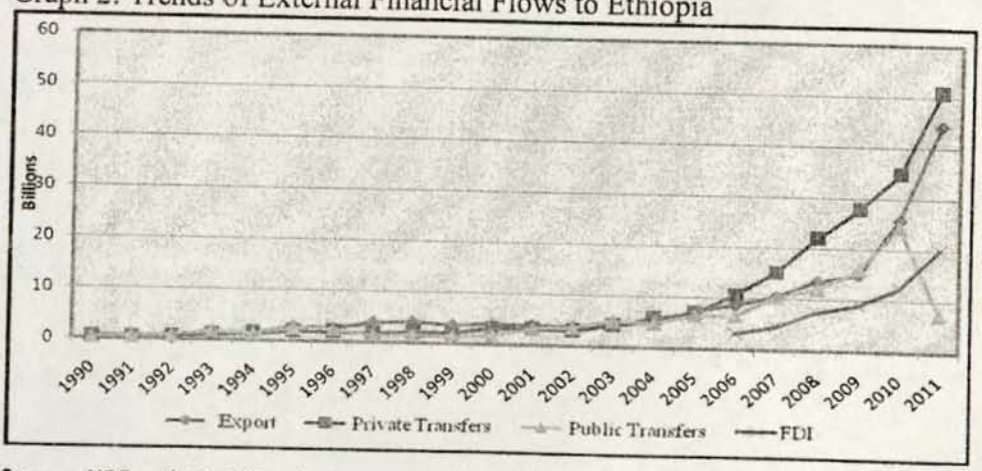
Appendix A: Trends in Remittance Flows and other External Finance to Ethiopia

Graph 1: Trends of Remittance Flows to Ethiopia



Source: World Bank Database, accessed in July 2013.

Graph 2: Trends of External Financial Flows to Ethiopia



Source: NBE and World Bank Database, accessed in July 2013.

Appendix B: Tobit Estimation Results

VARIABLES	(1) Food	(2) Non-food	(3) Education	(4) Health	(5) Durables	(6) Agricultur
AGE	0.0001	-0.0053	0.0076*	0.0096	-0.0266***	-0.0020
	[0.002]	[0.004]	[0.004]	[0.008]	[0.009]	[0.004]
SEX	-0.0596	-0.3479**	0.5073***	0.1686	0.4840	0.1200
	[0.078]	[0.151]	[0.169]	[0.322]	[0.375]	[0.146]
EDUCATION	0.0624	0.0842	0.3702***	0.2425	-0.0683	0.1457*
	[0.046]	[0.089]	[0.097]	[0.185]	[0.213]	[0.086]
HHSIZE	0.0911***	0.1164***	0.3865***	0.1841***	0.0723	0.1268***
	[0.013]	[0.025]	[0.028]	[0.053]	[0.061]	[0.024]
LANDSIZE	-0.0055	0.0475**	0.0836***	0.1382***	0.1413***	0.1822***
	[0.011]	[0.022]	[0.023]	[0.044]	[0.051]	[0.021]
REMITTANCES	0.0216*	0.0415*	0.0325	0.1279***	0.1706***	0.0315
	[0.012]	[0.023]	[0.025]	[0.048]	[0.056]	[0.022]
ASSETS	0.2592***	0.7041***	0.4360***	0.3487***	1.2104***	0.5527***
	[0.026]	[0.050]	[0.056]	[0.106]	[0.126]	[0.048]
INCOME	0.0095	0.0671***	0.0358**	-0.0516	-0.0123	0.0533***
	[0.008]	[0.015]	[0.016]	[0.032]	[0.037]	[0.014]
LOAN	0.2775***	0.2642**	0.5381***	0.6632***	1.0011***	0.3131***
	[0.056]	[0.108]	[0.120]	[0.231]	[0.273]	[0.104]
Observations	1,469	1,469	1,469	1,469	1,469	1,469

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Appendix B: OLS Estimation Results

VARIABLES	(1) Food	(2) Non-food	(3) Education	(4) Health	(5) Durables	(6) Agriculture
AGE	0.0001	-0.0049	0.0062**	0.0059	-0.0107**	-0.0019
	[0.002]	[0.003]	[0.003]	[0.004]	[0.004]	[0.004]
SEX	-0.0617	-0.3276**	0.3408***	0.0778	0.2310	0.1161
	[0.077]	[0.141]	[0.117]	[0.173]	[0.182]	[0.146]
EDUCATION	0.0634	0.0767	0.2798***	0.1199	-0.0368	0.1448*
	[0.045]	[0.083]	[0.069]	[0.101]	[0.107]	[0.086]
HHSIZE	0.0895***	0.1116***	0.2730***	0.1053***	0.0201	0.1268***
	[0.013]	[0.023]	[0.019]	[0.029]	[0.030]	[0.024]
LANDSIZE	-0.0055	0.0482**	0.0678***	0.0860***	0.0848***	0.1820***
	[0.011]	[0.020]	[0.017]	[0.025]	[0.026]	[0.021]
REMITTANCES	0.0218*	0.0378*	0.0139	0.0689***	0.0887***	0.0319
	[0.012]	[0.021]	[0.018]	[0.026]	[0.028]	[0.022]
ASSETS	0.2577***	0.6727***	0.3129***	0.2370***	0.6495***	0.5522***
	[0.026]	[0.047]	[0.039]	[0.057]	[0.060]	[0.049]
INCOME	0.0094	0.0631***	0.0246**	-0.0356**	-0.0121	0.0531***
	[0.008]	[0.014]	[0.012]	[0.017]	[0.018]	[0.014]
LOAN	0.2757***	0.2526**	0.3227***	0.3243***	0.3522***	0.3151***
	[0.055]	[0.101]	[0.084]	[0.123]	[0.130]	[0.105]
Observations	1,469	1,469	1,469	1,469	1,469	1,469
R-squared	0.30	0.37	0.31	0.15	0.19	0.41

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1