Migrant Remittances and Expenditure Patterns of Rural Households in Ethiopia: Evidence from ERHS*

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Abstract:

This paper assesses the impact of migrant remittances on expenditure patterns of rural households in Ethiopia. Specifically, the paper investigates the extents to which receipts of remittances affect the consumption and investment behaviors of rural households. Using 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. The result also indicates that remittances have positive and significant impact on consumption expenditures. This implies that migration and remittances are used as a short term coping strategies and hardly used as stepping-stone to productive investment options.

Key Words and Phrases: remittances, expenditure patterns, consumption and investments, rural households

JEL Classification: D01, D11, D12

1. Introduction

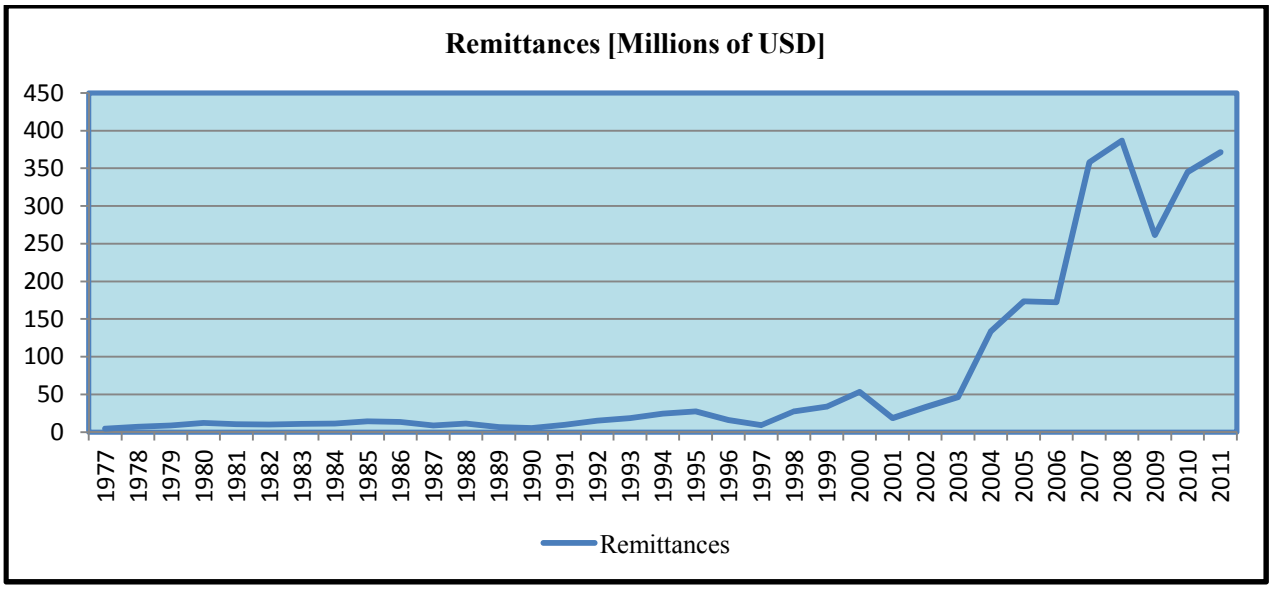
Migration is an essential element in the historical processes of social, political and economic dynamics. Specifically, development and migration are intertwined in a set of complex, heterogeneous, and changing relationships in which causality is never one way (Bacwell, 2008). In other words, migration can be seen as a both a cause and outcome of development and underdevelopment. In sub-Saharan Africa, in particular, though political instabilities and social disorder has been largely considered as a cause to migration, current data show that many migrants leave their country of origin to win better bread for themselves and more importantly for their families under financial insecurities (Adepoju, 2008). This implies that, the perverse economic condition at home forces many people to migrate to the land they have not been before.

Despite the fact that migration is considered as a hostile in the eyes of policy makers and practitioners, it is contribution 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 officially recorded and transfers through informal channels, is even rise higher. 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. This implies that development practitioners and policy researchers need to deliberate how to best manage remittance flows.

Ethiopia also faces such challenges with respect to migration flows rooted from food insecurity, overpopulation, drought, political instability, and ethnic conflict. 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). Even the figure might significantly be greater if those migrated illegally are taken in to account.

Remittances to Ethiopia from the migrant workers represent significant foreign source of income. The World Bank ranked Ethiopia to be the 8th largest remittance receiver 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 4 million USD to 47 million USD. Afterwards, however, the growth has been sharp reaching 172 million USD in the year 2007 (see Graph 1.1 below). Measured relatively, remittance has averaged 1.3 percent of GDP over the last 30 years, according to the National Bank of Ethiopia data. There is however a large discrepancy between the figures recorded by the IMF and officially recorded remittance inflows reported by the National Bank of Ethiopia. The National Bank reports remittances inflows of about USD 600 million in 2010 and estimates the actual volume of remittances to reach above USD 1 billion, if the flows through both formal and informal channels are taken in to account (Geda and Irving, 2011).Yet, Berhanu et al (2004) cited in Aredo (2005) indicate 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 ODA to Ethiopia if the potential level is to be materialized.

Graph 1.1: Trends of Remittance Flows to Ethiopia

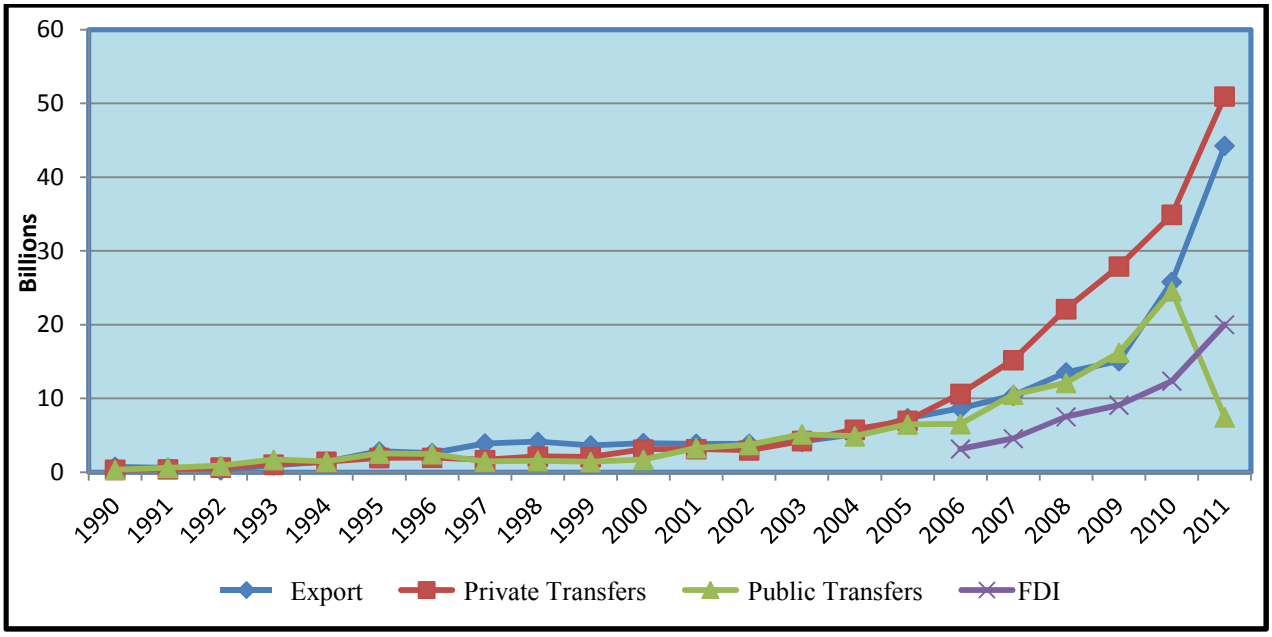


Source: World Bank Database, accessed in July 2013

The importances of remittances to the Ethiopian economy become vividly apparent when the remittance figures are compared to other external income sources of Ethiopia. Export as the source of foreign currency has been a significant external finance for Ethiopia. Yet to the surprise of policy makers and practitioners, remittance flows has currently surpassed the export earnings of Ethiopia and seemed more promising sector to the country's economic development. 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 the export earnings and the difference in the shares contributed to the GDP has widened to 3 percent in 2009. Similarly, in 2011 fiscal year, Ethiopian earned only about ETB 44 billion from the export sector while the private transfer brought home 50 billion ETB. If the amount of money that has been transferred

informally through black market would have been added to the figure, the difference could rise high.

Graph 1.2: Trends of External Financial Flows to Ethiopia



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

Similarly, government has been encouraging the Foreign Direct Investment (FDI) inflows by making investment climates conducive to the foreign investors. However, it has now become evident that the less anticipated remittance has performed well in boosting the country's GDP than FDI. In 2005 for example, FDI contributed only about 2.41 percent to GDP while private transfers accounted for 8.08 percent of the GDP. Similarly, 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 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 in the economy.

The role of remittances in an economy is even greater when one consider the household level impact of the income. Remittances play a critical role in the household financial dynamics in Ethiopia for practical reasons. First, remittances directly alleviate the poverty of households to whom they are sent. Furthermore, it is a 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 their receivers and less hardly susceptible to abuse of corrupt officials (Bigsten et al. 2005).

It is generally recognized that migrant transfers constitute an important source of income for Ethiopian households. Remittances are mainly used as risk-reducing instruments and as insurance against external shocks (Aredo, 2005). Bigsten et al (2005) investigated income dynamics of households in Ethiopia for the period 1994-1997 and concluded that significant number the households relied heavily on remittances in that period. The study indicates that in 1997 remittances were the primary sources of income for 22 percent of the households in the sample in Ethiopia. Moreover, the mean share of household income provided by the remittances was 25 percent in that year. 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 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, the roles of remittances on poverty alleviation and welfare improvements are tremendous. Employing Heckman's selection method Beyene (2004) found that remittance has

significantly reduced poverty among the sample of households he investigated. According to his result even though only 14 percent of the households received remittance, poverty decreased significantly 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 results show a strong positive effect of remittances on household subjective wellbeing. Comparing with the effect of migration on subjective wellbeing Andersson (2012) concludes that the effect of migration on welfare status of the households works through the impact of remittances on welfare.

However, the micro level 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 arguments. 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 hence not subject to different decision making processes. In other words, remittance doesn't 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 and because households do-not pool their income from different sources (Adams et al 2008). Furthermore, it is assumed that the decision making process of how to spend a limited budget of the household can be different when households receive remittances than when one is not received.

Notwithstanding such theoretical contemplations and the relative importance of the issue for remittance-development nexus in Ethiopia, the relationship between the receipt of remittance and expenditure patters is little explored. Studies undertaken so far focused on the impact of

remittance on the welfare status of households (see Anderson, 2012). Others, on the other hand, dealt with the role of remittances in poverty alleviation (see Beyene, 2004; Bigsten et al. 2005). However, the developmental impact of remittances depends on whether the remittance income is spent on consumption or investment goods. Therefore, it is imperative to know the impact of remittances on expenditure patterns of remittance receiving households. Such studies are crucial because remittances spur growth and hence beneficial to local development only when they are spent on investment or investment-type goods. The central objective of this study is, therefore, to examine whether remittances affect households' consumption (expenditure) and saving patterns.

2. Remittance, Poverty Alleviation and Expenditure Patterns: Literature at 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 were 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 does 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 the economic activity. The effect could even become negative depending on whether the 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 received remittances as an altruistic gesture. The recipient maximizes utility by selecting an optimal mix of his labor-leisure choice. Since remittances will accrue regardless of the recipients' labor 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 the certain threshold. UN (2010) indicated that with the 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. A 10 percent increase in the share of remittances in a country's GDP, lead to a reduction of 1.6 percent of people living in poverty. Similarly, Campos and Palomo (2002) found that in 2000, the remittances helped reduce the national poverty rate by 4.2 percent in El Salvador as well as reduced the 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.

López (2005) found that remittances have a statistically significant impact in improving welfare in Mexico at the municipal level. Likewise, 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 the large household survey data from rural Mexico to show the impact of international remittances on welfare. The study estimates 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 the home countries. The result from this body of literature is mixed. Asiedu (2003) using the survey data from Ghana households showed that nearly 30 percent of remittances are used for the purpose of investment and construction of house. 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 behavior of household for consumption and investments, in both the 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 contrary to the Chami et al (2003) stylized fact that a significant proportion, and often the majority, of remittances are spent on consumption that is status-oriented. By using 1988 survey of 1526 Egyptians 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 an entrepreneurs on their return to the home country.

3. Method of Analysis

3.1 Empirical Model

A popular framework used to trace the relationship between expenditure patterns and income of a given household is the Engle's Curve. An Engel curve is a function describing how a consumer's expenditures on some good or service relates to the consumer's total resources

holding prices fixed (Lewbel, 2006). It provides a framework to test 'Engel's law' that poorer households devote a higher share of total expenditure to food. Apart from its original version, several functional forms have been proposed in economics (Castaldo, 2007). A popular form that is consistent with household utility-maximization is provided by the Working-Leser specification (Working, 1943; Leser, 1963), which relates budget shares linearly to the logarithm of total household expenditure as in the following structure.

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

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 behaviors; α_i, β_i and γ_i are unknown parameters requiring estimation and relates to household and other characteristics and ε_{ij} is an error term.

For the purpose of this study two modifications are introduced on the Working-Laser specification. First, instead of using budget shares of expenditure categories, expenditure levels are modeled. This is because the empirical strategy adopted in this study requires a lognormal model which is less practical with the budget shares specification. Furthermore, since we are not interested with income elasticity of different expenditure categories, modeling expenditure levels instead of budget shares doesn't have significant impact on the 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 the 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 behaviors 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 purposes, therefore, takes the following form:

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

Where e_{ij} is expenditures corresponding to household j and good i, R_j captures whether the household receives remittances or 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. Therefore, the model is an equation system with dependent variable censored by latent variables. Estimating a censored system of equations is no 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 the case 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.

A Tobit model is popular empirical model used for censored data. Yet, Tobit model estimation makes strong assumption that the same probability mechanism generates both the zeros and positives (Cameron and Trivedi, 2005). In reality, however, the mechanism that determines zero or nonzero expenditures may not be the same as the mechanism that determines the amount of positive expenditure. 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 hurdle model, can provide a better fit by relaxing the Tobit model assumptions. Furthermore, unlike the Tobit model, neither the homoskedasticty nor the normality assumption is needed for consistency of the hurdle model estimators. Therefore, this study has adopted the two-part modeling technique because it separates the mechanisms that generate zero and positive expenditures, on top of its parsimony as it doesn't impose stringent conditions for consistency.

The first part of the 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 are usually address two independent questions. Let e denotes 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:

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

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 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.

3.2 Data Issues

The data set used to test the impacts of remittance receipt on expenditure patterns of rural households comes from the Ethiopian Rural Household Survey (ERHS). These data were collected by the Economics Department, Addis Ababa University, the Center for the Study of African Economies (CSAE), University of Oxford and the International Food Policy Research Institute (IFPRI), Washington DC. The sample size is close to 1,480 rural households in 15 Ethiopian villages across four major regions of the country: Tigray, Amhara, Oromia 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 data were collected for a total of seven rounds, this study uses the latest round of the data set which was conducted in 2009 to estimate the theoretical model specified above.

Since the focus of the present research is on the impact of remittances on household expenditure (consumption) behavior, the unit of interest is the household. The key dependent variables of interest for the empirical analysis are six broad categories of expenditure items defined as food;

non-food; health; education; savings, investment and durables and agricultural expenditures. The expenditure on food was collected by means of a 14-day diary, and 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 saving investment and durables expenditures were collected by means of four months diary and scaled up to obtain 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 3.1: Description of items in different expenditure categories

Expenditure categories	Description of items
Food	Purchased food items and produced 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, labor 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, labor costs and other related

Source: Compiled from ERHS (2009) data

Similarly, a set of other variables capturing the characteristics of the 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, total assets of the household. To capture the difference in spending behaviors 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, the receipt of the money could take the form of remittance, gift, inheritance donation/aid and other transfers, only those 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.

4. Results and Discussions

The prime objective of this study was to see how the receipt of remittances affects the spending behavior of households. In other words, the task is to show whether remittance receiving households spend more on investment goods than non-receiving households. This is a vital question given the fact that remittances are significant external financial income and it directly reaches tremendous 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). To address the question, this study employed both descriptive and parametric approaches. The results of the study are presented below. The descriptive and non-parametric results would be discussed first. Then, the parametric results from the two-part would be presented. Finally, we will wrap up with some conclusion and recommendations.

As a prelude to the estimation results from the parametric estimation, this study has calculated some descriptive test statistic. Table 4.1 below shows some characteristics of the households included in the sample. The result indicates that out of 1480 household included in this study,

some 363 of them received either domestic or international remittances during the year under study. This amounts to 23.7 percent of the total households. This indicates that significant number of rural households receive remittances either in cash or in-kind. These households received on average 551 ETB amount of remittance during the period under study. Consequently, it clear 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 of the rural households. The result indicates that receiving households have lower land holding size and only 64 percent of them rely on agriculture as their main livelihood activity.

Table 4.1 also shows the percentage of household 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 is too early to conclude, it is possible to expect remittance receiving households to spend more on consumption goods than non-receiving households. Second, it is also possible that remittance receiving households are poorer than non-receiving households and hence the Engle's law is at work. 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. It is reasonable, therefore, to assume that remittance receiving households spend more on consumption items and less on investment type goods.

Table 4.1: Descriptive Statistics of Some Variables

Variables	All Sample	Non-Receiving	Receiving
Age of the Head	53	52	55
Education Level of 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

In fact it is not appealing to conclude that the foregoing results are robust. The descriptive (mean) analysis doesn't show how significant the difference in spending patterns of remittance receiving and non-households. However, it is possible to assess the significance of the differences between a sample mean, and a (perhaps hypothetical) 'true' mean, or between two sample means, using the t-statistic calculated as part of the t-test. Table 4.2 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 the 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 are not in receipt of 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 highly 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 the spending patterns of rural households across the selected commodities.

Table 4.2: Mean Difference 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 the 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 behaviors of households. The following two tables, Table 4.3 and Table 4.4, report the estimation results of two-part model. The model includes a variety of other control variables in addition to standard variables and variable our interest. The result from the Table 4.1 shows whether the probability of positive expenditure changes with the household characteristics, model variables and receipt of remittances. It clear from the table that education increases the probability of positive spending on education and

health and doesn't 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 expenditures on agricultural inputs. On the other hand, availability of loan from any source increases the probability of positive expenditures on investment goods but it doesn't increase the probability of positive expenditures on consumption items.

Turning attention to our variable of interest, remittances increase 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 4.3: Part I: Probit Regression Results

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

Standard errors in brackets, ***** p<0.01, ** p<0.05, * p<0.1**

In the previous discussion, we have seen that receipt of remittances increase the positive probability of spending on some items, although it is impossible to robustly classify those items either as consumption or investment goods. However, the result from the second part of the two-part model conveys more informative and convincing 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 expenditure levels. The diagnostic tests of the model indicate that the model fits the data well. The log likelihood values of the two parts model (which the sum of the log likelihoods of the two model) is considerably higher than the log likelihood values of Tobit, which 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 different items. Furthermore, included explanatory variables have explained a reasonable amount of variation in the dependent variables, expenditures on different items, as can be seen from the R-squared.

Table 4.4: Part II: Lognormal Regression Results

	Expenditure Categories					
VARIABLES	(1) Food	(2) Non-Food	(3) Education	(4) Health	(5) Durables	(6) 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]
LANDSIZE	-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

Robust standard errors in brackets, *** 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 sizes increases the investment expenditures on agricultural inputs. Increase in income increases expenditures on some items such as non-food items and

agricultural inputs, but decreases on others, such as health services. This might be the case because wealthier families (and hence healthier families) to spend less on health services. Furthermore, asset levels consistently and significantly increase spending on all items. Contrary to ones expectation and the results from part one, availability of loans doesn't increase the expenditures on investment type goods, but increases the consumption expenditures.

The estimated coefficients corresponding to shows that remittance have significant effects on the ways households decide how 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 amount devoted to foods by two percents. In a similar fashion, 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 the receipt of remittances significantly and positively affects consumption items which increases the welfare of households in the short-run, but no longer available to boost the welfare of households and alleviate poverty in the long run. On the other hand, 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 spend remittances on consumption items such as food and non-food items than on investment (or investment type) goods. As a result, remittances lose the potential alleviate poverty in the long run, are just 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 their budget shares of spending on investment goods. In order to see how sensitive the results are the

empirical model was estimated by with Tobit. The results are presented in Appendix. The estimated 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 normality 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.

5. Conclusions

This study has tried to assess how the receipt of remittances affects the spending behaviors of rural households in Ethiopia. In particular, the study explored the relationship between remittances and expenditures on different categories of consumption and investment goods. Addressing this issue is categorically important in the light of the fact that developmental impacts of remittances depends on whether the remittance income is spent on consumption or investment goods. To do 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 descriptive 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 24 percent of rural households surveyed have received financial or in-kind remittances either from domestic or international migrants. This result clearly shows that significant number households receive

remittances each year, even compared to countries with high migration incidence such as Mexico and Albania where only less than 20 percent of households receive remittances (see Rivera and Gozalez, 2009; Castaldo 2007). Furthermore, the average amount of remittances received by each household is even significant which amounts to close to 10 percent of the household average income. This augments the fact that remittances to Ethiopia have become the most important external funding numerically outshining export earnings and Official Development Assistances (ODA) to Ethiopia.

Second, we have established both from descriptive and parametric results 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 7 and 4 percents more on food and non-food items than those households with no remittance income. The results from parametric analysis have also confirmed that remittance income significantly increases food and non-food items by about 2 percents for one percent increase in remittance income. 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 improve welfare only in the short-run and will never serve to alleviate poverty 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 remittance receiving households and non-receiving households. Similarly, the estimation results from econometric model revealed that remittances do not significantly affect the 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 goods and generating income on sustainable basis.

However, the consensus in the literature is that remittance improves the welfare of households and alleviates poverty on sustainable basis only when it is spent on investment-type goods. Therefore, recognizing the importance of such huge financial flow in poverty alleviation, it is recommended that government should put strategies in place to attract remittances to productive sectors with high potential to increase employment and production. To do so, government can promote financial literacy and remittance based investments such as remittance bonds. Furthermore, responsible government agency should provide vocational training and disseminate information pertaining to rural investment opportunities to encourage rural households use remittance income effectively.

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Appendices

Appendix A: Tobit Estimation results

VARIABLES	(1) Food	(2) Non-food	(3) Education	(4) Health	(5) Durables	(6) Agriculture
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