The Impact of International Remittance on Poverty, Household Consumption and Investment in Urban Ethiopia: Evidence from Cross-Sectional Measures*

Kokeb G. Giorgis[1] and Meseret Molla[2]

Abstract

International remittance is an essential source of foreign exchange for Ethiopia, perhaps larger than the export earning of the country in its foreign exchange generation capacity. In the year 2013; total international remittance in Ethiopia reached 557 million USD from 387 million USD in 2010 according to World Bank Report. To assess the impact of international remittances on poverty, household consumption and investment in urban Ethiopia, this study used primary household survey data collected from four major urban areas of the country namely Addis Ababa, Gonder, Hawassa and Mekelle. The study applies both descriptive and empirical analysis; using Heckman two stage selection model the study finds that international remittances substantially reduce the level, depth and severity of poverty. For the sub sample of households which receive remittances poverty head count index, poverty gap and squared poverty gap declined by 64 percent, 67 percent and 70 percent respectively. Similarly the study found that all remittance receiving households spend part of their remittance income mainly on food and non durable goods. Yet, a good number of households are also used part of it for investment such as health, education and housing. Nevertheless; relatively insignificant number of households save part of remittance income and none of them used it to invest in entrepreneurial or other income generating activities.

Key words: International remittance, poverty and household consumption and Investment

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[1] PhD Candidate at School of Economics, Addis Ababa University
Email: kokeb96@yahoo.com
[2] PhD Candidate at College of Development Studies, Addis Ababa University
Email:mesenana_03@yahoo.com

1. Introduction

From the standpoint of economic development, the impact of international migration and remittances thereof on poverty in the developing countries is tremendous. These remittances which are spent or used by households in recipient countries seem central to any attempt made to evaluate the overall effect of migration and remittances in developing countries including Sub-Saharan Africa (SSA).

According to the UN report, international migration is one of the vital factors influencing economic relations between developed and developing economies in the 21st century. At the beginning of the century, it was projected that around 175 million people - nearly 3 percent of the world population lived and worked outside the country of their origin (UN 2002).

Based on the 2013 World Bank Report, total stocks of emigrants in SSA reached 22 million; of these more than 620 thousands are Ethiopian migrants; which is equivalent to 0.7 percent of the 82.8 million population of the country in year 2010. Of the total stocks of Ethiopian migrants around 61 percent reside in Sudan, the United States of America and Israel. This implies that these countries are the three major destinations for Ethiopian migrants. Moreover, Ethiopians in Western Europe amount to 11.2 percent of the total stock of migrants in the same period. Ethiopian serving housemaids in Saudi Arabia amount for 4.6 percent of the total Ethiopians living abroad. This number is growing at a higher rate since then. It is also becoming a common practice for young women to go to the Middle East to work mainly as housemaids due to the regions geographic proximity and nature of the labor market.

Ethiopia, with a population of about 84.5 million is the second-most populous country in Africa next to Nigeria. Though one of the world's oldest civilization, Ethiopia is currently one of the world's poorest nations. At US$

380, Ethiopia's per capita income is much lower than the SSA average of US$ 1,165 in FY 2010 (World Bank 2011).

According to the recent Interim Report on Poverty Analysis Study (2010/11) of Ministry of Finance and Economic Development of Ethiopia, in 1994/95 the total population under the poverty line was close to 49.5 percent. Since then, it continuously kept on declining to 38.7 and 29.6 percent in 2004/05 and 2010/11 respectively. As per the report, this is mainly due to the implementation of the comprehensive poverty reduction strategy (MoFED 2012).

Thus it is important to know how poverty is affected by remittances and how remittances are spent by households to design polices that reinforce use of remittances in a way to alleviate poverty and enhance household investment. As poverty reduction is a top priority to developing countries including Ethiopia.

We have two rationales for this study. First, studies on the impact of international remittance on poverty, household consumption and investment in developing countries and particularly in Ethiopia have been quite limited and inadequate even though remittance inflow to these countries is tremendously increasing. For instance, as discussed in the background section of this paper, international remittances to Ethiopia has been increased by more than nine folds to reach 524 million USD in 2012 from a mere 53 Million USD in 2000. Despite this fact a little attention has been paid to examining the economic impacts of these transfers on households in the country, hence studies of this nature in Ethiopia are scant. The only paper worth mentioning is a study conducted by (Berhe 2012); it investigates the effect of remittances on poverty and inequality in Ethiopia. It has used household survey data collected by Addis Ababa University school of Economics in collaboration with Gutenberg University in 2004. The two major limitations of the study are first it has used old data sets, data collected before Eight years; in 2004, secondly the data sets used has incomplete

information about migration experience and remittances of households; as the data had been primarily collected to study urban poverty in the country than how international remittances affect poverty. Therefore our study is justified by the fact that the above two major limitations are accounted as it uses newly collected primary data sets on international migration and remittances. It is also further justified by the fact that it tried to shed light on how remittances are spent by recipient households in Ethiopia which is totally missing in the literature.

Second, the impact of remittance on household consumption pattern and investment is controversial. Castaldo and Reilly (2007) find that households that receive international remittance in Albania spend more on durables and spend less on food, on average ceteris paribus, compared to households which do not receive any form of remittances. However, households in Ghana treat remittances like any other source of income and their marginal spending pattern does not depend on remittance income (Adams et al., 2008). Poorer households in Indonesia tend to spend their remittances at margin more on consumption rather than investment goods. While Airola (2007) observed that households which receive remittances in Mexico spend more of their total income on investment goods like housing, healthcare and durable goods. Thus there are mixed views on how international remittances are spent by households which differ from one country to another. But so far no empirical research had been conducted on how international remittances are spent by households in Ethiopia. For this reason conducting this research is helpful to fill this research gap.

Thus the key research question is: to what extent do international remittances affect poverty, and how are remittances spent by urban households in Ethiopia? Specifically, what is the difference in poverty level as measured by poverty index and poverty gap index between households that receive cash and non cash international remittances and those who do not? Do the poor benefit from remittances more significantly than the non poor? What are the factors that determine how remittances are spent or used by households in

urban Ethiopia? Does the expenditure pattern of households vary from those do not receive remittances?

2. Theoretical and Empirical Review of Literature

Remittance implies the transfer of money and/ or goods to households by migrants working outside of their origin either in urban areas or abroad. At the start of the 21st century, both internal & international migration has been at high level and hence remittances have been intensified. These resources represent one of the key issues in economic development to the recipient countries.

Since 1980's there are extensive studies on the economic impact of international remittance on poverty, income inequality and how remittances are spent by households in the recipient developing countries with mixed findings, different methodology and data.

Vast majority of results from empirical studies indicated that remittances have played a positive role in reducing poverty and increasing welfare of households and communities even if there is a possibility for worsening income inequality ((Adams 2006), (Adams & Cuecuecha 2010), (Lisa 2012)). There are also empirical studies which proved the other way (Wouterse 2008), however, this remains to be investigated in Ethiopia.

Studies such as Adams (2005) tried to see the impact of international remittances on poverty and income inequality in Guatemala and deduced that the overall remittances did not significantly reduce poverty in the country as the head count ratio fell from 0.56 to 0.55. Although another paper by the same author Adams (2006) inferred that the level, severity and depth of poverty was considerably reduced in Ghana, as a result of international remittance, where the severity of poverty has declined by 34.5%. However both studies applied counterfactual estimation procedures. But such difference may occur as a result of how poverty is being calculated.

Adams & Cuecuecha (2010), using household panel data, conclude that international remittances have a large statistical effect on reducing poverty in Indonesia. Whereas a study in Burkina Faso conclude that remittance had a limited impact on social welfare but aggravates income inequality as significant numbers of households with international migrants were found to be in the high income groups (Wouterse 2008). However, if some of the remittance receiving households comes from the lower income spectrum, remittances can decrease poverty and inequality (Adams 2006 & Berhe 2012).

The only paper studied on the impact of international remittance on poverty and inequality in Ethiopia was by (Berhe 2012) using urban household survey data collected in 2004. It concluded that poverty considerably reduce, where the head count ratio fell from 30 percent to 25 percent. Similarly both the poverty gap and squared poverty gap ratios also decreased from 6.6 percent to 5.2 percent & from 2.2 percent to 1.7 percent respectively. Likewise a paper by (Lisa 2012) with broader scope compared to the above study used propensity score matching to see the impact of remittances on welfare of urban & rural households using primary data and conclude that remittances positively affect household's welfare. Our study, however; differs from the aforementioned studies primarily because it not only shades light on the impact of international remittances on poverty but also on how international remittances are spent by households.

There is no strong evidence in the empirical literature that answers questions like: how international remittances received are spent at household level? However, there are different arguments on the literature on how remittances are spent by recipient households and its implication to economic development of the origin country. These arguments are summarized into three dominant views as follow:

The first and perhaps the most dominant view is that remittances are spent like any other source of income and are considered as fungible. In other

words, a dollar of remittance income is considered just similar to a dollar of salary/wage income and hence there is no difference on how households spent this remittance. The second view argues that as remittances create behavioral change at the level of households, then, it is more likely to be spent on consumption than investment goods. The third and more recent argument is that households spend higher proportion of their income from remittances on investment goods such as human & physical capital than on consumption goods since income from remittances are temporary. This argument emerges from the perspective of permanent income hypothesis.

According to (Adams, Cuecuecha & Page 2008), using a cross sectional data and multinomial logit selection model, both internal and international remittances received by households in Ghana treat remittances just like any other source of income, and there are no changes in marginal spending pattern for households.

Chami et al. (2003) find that remittances are spent on consumption, with a smaller fraction going to savings and investments. However, more recent literature stresses the importance of remittances on economic development, through spending on investments. For example a study by (Adams and Cuecuecha 2010) showed that remittance recipients in Guatemala marginally spend more on one investment good, education. They state that this is consistent with the permanent income theory which finds that a higher marginal propensity to invest is found with transitory income or remittances than with permanent income.

Using data from the Mexican income and expenditure survey for 1989 (Hoyos 2000), found that remittance receiving households devote a higher proportion of current expenditures to investment and perhaps even to savings than non-remittance receiving households. Similarly the finding of (Ahmed 2000), suggested that remittances in postwar Somaliland have contributed to the rapid growth of a vibrant private sector. According to Adams (2006), households receiving international remittances spend less at margin on

consumption goods like food and more on investment goods like housing and education and invest more in entrepreneurial activities. However, there are no empirical research outputs on how international remittances are spent by households in Ethiopia. For this reason conducting this research is helpful to fill this gap.

3. Methodology

3.1 Data Collection Methodology

The unit of analysis is remittance and non-remittance receiving urban households selected from four major cities of the country namely: Addis Ababa, which is the capital city of Ethiopia, and three regional cities Gonder, Hawassa and Mekelle. All these are covered by the rich primary data collected by the researchers. What we mean by a household in this survey follows from the definition previously used in other migration surveys, where it is extended to not only include members who live together and have communal arrangements concerning subsistence and other necessities of life but also those members who presently reside abroad but whose obligations are to that household and hence a person living abroad can in this way still be considered as member of the household.

A total 700 urban households were randomly selected. Of these 304 households, which are around 43 percent of the total sample, are from Addis Ababa. The other three cities namely Gonder, Hawassa and Mekelle each have a sample of 132 households since the population size of these cities is more or less similar. However, out of the total 700 households randomly selected, 636 households were interviewed between January and March 2013 with 9 percent non response rate. Households with a returnee migrant and that may have received remittances in the past might differ from the other households in the sample, and to avoid any bias in the results, households with returned migrant are excluded from the sample.

3.2 Methods of Data Analysis

3.2.1 Descriptive Analysis

Descriptive statistics such as mean, standard deviation, frequency and percentile were computed for the variables following the completion of data processing, and also run a t-test for continuous variables and chi-square test for dummy variables to detect the statistically significant differences between households which received and that did not received international remittances.

3.2.2 Econometric model

There are a number of methodological issues to look at in examining the impact of international remittances on poverty reduction. As discussed in the literature review, remittances can be considered as exogenous or endogenous. Whichever way you select, the economic question and the methodology you apply will vary. If remittances are treated as exogenous transfer then the objective will be to see how remittances affect the observed level of poverty where as if remittances are considered as a substitute for home or domestic earnings the economic question will be to compare & contrast the observed (actual) level of poverty with counterfactual scenario without migration and remittances which includes an imputation of the home earnings of migrants had those people stayed and worked at home (Adams 2006). This latter treatment is our objective and we adopted econometric techniques suitable for this analysis.

There are two different strands of literature on migration and hence remittance receiving households are self selected or randomly selected. Majority of the literature on migration assumes that there is selection bias which can be observable or unobservable (skills, motivation and ability). For instance the findings by (Adams 2006) which assesses the impact of remittances on poverty in Ghana and another paper by (Barham and Boucher 1998) in their examination of selection bias among migrant

households in Nicaragua found out that there is "no selection bias" while the majority of the research out put on migration and remittances conclude that there are both observable and unobservable selection biases. Therefore, this research output applied Heckman two stage selection model to solve selection bias which result due to both observable and non-observable.

In econometric terminology, households with international migrants and receive remittance are considered as treatment groups while those households without international migrant and do not receive remittances as control group. Our outcome of interest as clearly stated in our objective is to see the impact of international remittances on poverty. Our interest is in making inference on those households with international remittances. This is the average treatment effect on the treated (ATT). ATT estimates on average how remittances affect the level of poverty in those households who receive this remittance had those households not received remittance.

In this approach the focus is on determining whether poverty levels are lower in the actual scenario, with migration and remittances. The core of the methodology consists of estimating what the migrants' income would be if migrant members had decided to stay, that is a counterfactual household's income needs to remove both the direct effects of migration on the earnings of the remaining household members.

This counterfactual approach was initially developed by (Adams 1989) in his study of the effects of remittances on poverty and inequality on rural Egypt taking three sample villages. In order to estimate the counterfactual household income, he estimated a mean regression of income of non-migrant households and used the resulting parameters remittance to predict the incomes of migrant households. These predicted incomes of migrant households were then used to estimate poverty and inequality in a counterfactual scenario of non migration. But here the key problem is an attempt to use income/consumption expenditure of non-migrant households to proxy for counterfactual income/consumption expenditure in estimating

treatment effects selection bias arises when the proxy is not close to the counterfactual which is proxied for. Hence, we use the following framework to demonstrate bias in estimating ATT. Hence the following equations can be used:

$$T^{*}_{i} = \mu_1 + \beta_1 Z_i + \omega_1 H_i + \varepsilon_{1i} \quad \textbf{(1)}$$

$$Y_{0i} = \mu_2 + \beta_2 X_i + \omega_2 H_i + \varepsilon_{2i} \quad \textbf{(2)}$$

$$Y_{1i} = \mu_3 + \beta_3 X_i + \omega_3 H_i + \varepsilon_{3i} \quad \textbf{(3)}$$

Where the first equation (1) models the treatment decision, weather a household receives remittances or not which depends not only on observable factors such as ' Z_i ' and ' H_i ' but there are also unobservable factors which affects the probability of migration and hence remittance. The second equation (2) models the outcome (Y) of non-treatment (with subscript 0) and Equation (3) models the outcome of treatment (with subscript 1). Where T_i represents the probability of migrating abroad and hence receives international remittance, Y_i is an outcome which is per capital household consumption expenditure, X_i is household level variables such as human capital, demographic and location variables; H_i is household head characteristics and 'Z_i' are observable and others (ε) are not. Which means all Z_i includes all X_i and other observable variables as well.

The average treatment effect on the treated (ATT) can be given by

$$ATT(x) = \underbrace{E[Y_{1i}|_{T_i=1}]}_{\text{observed}} - \underbrace{E[Y_{0i}|_{T_i=0}]}_{\text{counterfactual}} \quad \textbf{(4)}$$

The ready candidate to proxy for the counterfactual is to use consumption expenditure/income of households without international remittance. Hence

this bias is referred to as the "selection bias" in econometric which is given by:

$$\text{Selection bias} = \text{ATT} - \text{ATT} = \underbrace{E[Y_{0i}|_{T_i=1}]}_{} - \underbrace{E[Y_{0i}|_{T_i=0}]}_{} \quad \textbf{(5)}$$

Counterfactual proxy

Heckman two stage selection model is based on two equations: first, a choice equation which captures migration and the receipt of remittances; and second, household per capital consumption expenditure equation which measures the determination of household consumption expenditure on the receipt of international remittances.

To construct the counterfactual scenario of no migration and no remittance the first-stage choice function is the probability that a household has no migrant member abroad and hence receive no international remittances, therefore, modifying equation (1) above by splitting Z_i in to X_i and θ_i the type of selection equation which can be estimated as:

$$T^*_{i} = \mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i + \varepsilon_{1i} \quad \textbf{(6)}$$

Where T_i represents the probability for no migration and, hence, receives no international remittance, X_i is a vector of household level variables such as human capital, demographic and location variables; H_i is household head characteristics and θ_i is age of household head that is a variable which affects the probability of migration and hence remittance but not household consumption function and ε_{1i} is a disturbance term.

The rationale for including these variables in the first -stage probit function follows the standard literature on migration and remittances. As to Todaro (1970) basic human capital model it is highly probable that human capital variables are more likely to affect migration because more educated people

enjoy greater employment and expected income-earning possibilities in destination areas (Adams 2006).

In the second stage counterfactual consumption function is estimated for those households who do not receive remittance, the following function is estimated for the subsample of households which do not receive remittances modifying equation (2) by taking logarithm of the outcome equation we get:

$$\log \mathrm{Ci} = \mu_2 + \beta_2 X_i + \omega_2 H_i + \varepsilon_{2i} \quad (7)$$

Where the dependent variable $'\log \mathrm{Ci}'$ is logarithm of per capital household consumption expenditure than household income. Since the aim of this paper is to evaluate impact of remittance on poverty and most research outputs in developing countries like Ethiopia uses expenditure than income data for poverty analysis as expenditure is easier and more accurate to measure the income, though people tend to hide their income for fear of taxes and hence understate their income and poverty line which separates the poor from the non-poor is based on expenditure rather than income data.

X_i and H_i are defined the same way as in equation (6) and ε_{2i} is a disturbance term.

Since there is evidence from migration literature that households which receive remittances are not randomly drawn from the whole population. Using OLS method to estimate the consumption function will make the result biased as there is self selection, hence, Heckman (1979) two stage selection is applied where in the first stage the probability of having not an emigrant member abroad and hence not receive remittance is estimated using the probit function. Then, the information from the probability regression will be used in the second stage of consumption function.

In the first equation (6) T* is not observed, what is observed is only the sign of T*, i.e, weather the household receives remittance or not, i.e.

$$T_i = \begin{matrix} 1 \ if \ \ T* \ > 0 \\ 0 \ if \ \ T* \ \leq \ 0 \end{matrix} \quad \textbf{(8)}$$

We observe the dependent variable Yi in the objective function only for those households which do not receive remittances or $T_i = 1$.

As discussed above, problems arise when estimating the objective function if ε_{1i} *and* ε_{2i} are correlated. We make the following assumptions about the distribution and relationship between the error term and selection and outcome equation:

$$\begin{aligned} &\varepsilon_{1i} \ \sim \ N\,(0, \sigma^2{}_1) \\ &\varepsilon_{2i} \ \sim \ N\,(0, \sigma^2{}_2) \\ &corr\,(\varepsilon_{1i}, \varepsilon_{2i}) = \rho \end{aligned} \quad \textbf{(9)}$$

This implies that the error terms in equation (6) and (7) are assumed to be jointly normally distributed with mean zero and correlation ρ. Since the sign of T^*_i is only observed, then, we have normalization $\sigma^2{}_2 = 1$.

Under the above normality assumption about the error terms and using equation (6) and (7):

$$\begin{aligned} (\log C/\, X_i, H_i, T_i = 1) \ &= \ E(\log C/\, T*_i > 0) \\ &= \quad E(\mu_2 + \beta_2 X_i + \omega_2 H_i + \varepsilon_{2i} / \ \mu_1 + \beta_1 X_i + \\ &\omega_1 H_i \kappa\theta_i + \varepsilon_{1i} > 0) \\ &= \quad \mu_2 + \beta_2 X_i + \omega_2 H_i + \quad E(\varepsilon_{2i} \quad /\mu_1 + \beta_1 X_i + \\ &\omega_1 H_i \kappa\theta_i + \varepsilon_{1i} > 0) \\ &= \qquad \mu_2 + \beta_2 X_i + \omega_2 H_i \qquad + \\ &E(\varepsilon_{2i} /\varepsilon_{1i} > -\mu_1 - \beta_1 X_i - \omega_1 H_i - \kappa\theta_i) \end{aligned}$$

Hence we have to obtain the value of $E(\varepsilon_{2i} /\varepsilon_{1i} > -\mu_1 - \beta_1 X_i - \omega_1 H_i - \kappa\theta_i)$, when ε_{1i} *and* ε_{2i} are correlated according to Green (2003), it is given by:

$$E(\varepsilon_{2i} / \varepsilon_{1i} > -\mu_1 - \beta_1 X_i - \omega_1 H_i - \kappa\theta_i) = \rho\lambda i \quad \frac{\emptyset \frac{(\mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i}{(\sigma\varepsilon_{1i})}}{\varphi \frac{\mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i}{(\sigma\varepsilon_{1i})}}$$

Where $\emptyset$ and φ are respectively the density and cumulative normal functions. When we substitute it in the above equation it becomes:

$$E(\log \underline{C} X_i, H_i, T_i = 1) = \mu_2 + \beta_2 X_i + \omega_2 H_i + \rho\lambda i (\mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i) \quad \textbf{(10)}$$

Where the inverse Mills ratio is given by $\lambda_i = \frac{\emptyset (\mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i)}{\varphi(\mu_1 + \beta_1 X_i + \omega_1 H_i + \kappa\theta_i)}$ **(11)**

Hence, to include the selection term in the consumption function above, we estimated lambda from the probit function of no migration and no remittances from equation (11). Then the estimated value of λ_ι has been included in the consumption function. Hence, the function to be estimated in the second stage is:

$$\log C = \mu_2 + \beta_2 X_i + \omega_2 H_i + \rho\lambda_\iota + \delta_I \quad \textbf{(12)}$$

Where the $E(\delta_I / X_i, H_i, \lambda_\iota) = 0$

Once the selection term is included in the consumption function Ordinary Least Square (OLS) can be used to estimate equation (12). If the coefficient of lambda ρ is different from zero and statistically significant, then, there is correlation between the error terms of the two equations. Hence OLS on the outcome function will lead to bias and inconsistent estimates because $\rho\lambda i$. is omitted.

Before implementing the two stage procedure, model identification is not only at the heart of it but also it remains to be the most difficult task to do. A model is identified if the number of explanatory variables in the first stage

equation i.e selection equation exceeds that of outcome equation in our case the consumption function by at least one variable. But this is not as simple as that. The key econometric problem lies in choosing the variable that should go into the first and second stage equations since more or less the variables which affect probit function affect the consumption function. Here we need to select a variable which does not affect consumption function but that affects the probability of migration and hence remittances. For example (Adams 2005) used age of household head in his study in Ghana while ethnicity and religion were used by (Nnaemeka & et al 2012) for the study in Nigeria. Similarly (Berhe 2012) used religion as source of identification in his study in Ethiopia.

As a source of identification, in this study, similar to (Adams 2005) the age of the household head is used, other things remain constant. Older household heads will have more household members as adults in the age 15 to 30 category which creates higher possibility for migration and hence remittance as well. However, it is believed that age of household head has no direct impact on consumption after controlling all other variables such as demographic, human capital, ethnicity and location variables.

Once identifying the Heckman selection model, the two stage procedure was implemented. To predict counterfactual consumption for households which receive remittances, the following procedures are applied. Primarily, from equation (12) the parameters predicting per capital consumption expenditures are estimated in households that have not sent migrant abroad. Then these parameters are applied to migrant households to predict counterfactual per capital consumption expenditure.

To construct actual per capital consumption with remittances for those households with international migrants equation (12) is revised to include migration dummy to account for its effect on household consumption and hence welfare. Hence the equation can be rewritten as:

$$\log C = \mu_3 + \beta_3 X_i + \omega_3 H_i + \pi M_i + v_i \quad \textbf{(13)}$$

Where $'M_i'$ is a dummy variable for households with migrants abroad and hence receive remittances, it takes the value one if households do not receive remittances and zero otherwise. v_i is an error term X_i & H_i are defined as before.

In calculating counterfactual consumption and probit regression for remittance receiving households the vector of household level variables are revised so as to include migrants.

Once equation (13) is estimated, we can predict actual consumption for both remittance receiving and non receiving households. And to construct counterfactual consumption function for remittance receiving households, the values for remittance receivers are replaced by the estimated values from the selection controlled regression equation.

For the variables used in the Estimation of Model see Appendix Table 1.

4. Results and Discussion

4.1 Data and Summary of Descriptive Statistics

Comparing households who receive and do not receive international remittances city wise, the above table indicates the highest per capita remittance per annum is obtained by households from Addis Ababa and is more than twice when compared to households from Hawassa; where the lowest per capita remittance is generated. This may be due to the fact that households in Addis Ababa have higher probability of sending migrants abroad and hence receive remittance than other urban areas since cost of migration is relatively lower compared with other urban areas. Average remittance as a percentage of total household consumption in urban Ethiopia is highly significant. For example, households from Gonder cover more than three fourth of their consumption expenditure through income from international remittances which is highest compared to households of

Hawassa which covers 39 percent. These relatively big figures indicate that, international remittances have a significant share for those households who earn them compared with other sources of household income.

Table 1: Annual remittance per capita and remittance as a percentage of total household consumption expenditure

City	Remittance Receiving households				All households	
Obs.	PC Consu	Remit. exped	Remit as % Obs.	Remit. As % PC Remit	Consu.	exped
.Gonder	70	4,648(4581)	79%	119	2,734(4189)	47%
Mekelle	79	5,840(12236)	65%	157	2,9389135)	33%
Addis Ababa	143	7,795(13349)	73%	284	3,925(10230)	37%
Hawassa	36	2,850(3744)	39%	76	1,350(2931)	18%
		(328)		(636)		

Source: Computed from own survey data, 2013

Table 2: Summary of Annual international remittances for Urban Households in Ethiopia in 2013 in birr

	All remittance receiving hhs	All households
Average remittance (HH level)	20,000.12	10, 360
Average per capita remittance	6109.95	3151.05
Remittances % of total consumption expenditure	68.09 %	35.2 %
Remittance % of total income	44.39%	22.93%
Number of households (as a percentage of total sample)	330 (52%)	308(48%)

Note: 1 dollar is approximately 18 Ethiopian birr
Source: Computed from own survey data, 2013

Average per capita remittance for the sub-sample of households who had received remittance indicates more than 6,100 Birr per annum. When we compare this figure with GDP per capita income of around 9,900 Birr during the same period it is almost more than 60 percent of it, which shows on

average the inflow of international remittance is so big. Similarly, it may also substantiate the argument that international remittance figures of Ethiopia are underreported as it only includes remittances received through formal channels which ignores the informal channel.

Similarly, around 68 percent of the total household consumption expenditure is covered by incomes obtained from international remittance for households which receive remittances while on the other hand, for the whole sample including both remittance and non-remittance receiving households, it is around 32 percent. But this does not have to be taken into account to conclude as a national average figure since this only represents for major urban households which excludes the rural one. And it is obvious that urban households have a higher chance for sending migrants abroad compared to rural households. Nevertheless, the current high rate of migration from rural areas of the country to Middle East and South Africa seems to reduce this gap.

Table 3: Summary of Annual household consumption expenditure for remittance receiving and non receiving households

Variable Households	Remittance receiving	Non-Remittance Receiving Household	All Households
Annual household consumption expenditure (in birr)	40,402 (53450)	30,207 (25914)	35,480 (42722)
Annual per capital household consumption expenditure (in birr)	10,401 (10970)	8,388 (7603)	9,434 (9541)

Note: Standard Deviations are in brackets

Source: Computed from own survey data, 2013

The above table summarizes annual and per capita consumption expenditure for remittance receiving, non receiving and all sampled households. The result confirmed that annual consumption expenditure is higher by about 31 percent for remittance receiving households compared to non remittance receiving and

around 12 percent for all households. Similarly, per capita annual household consumption expenditure is higher for remittance receiving households compared to both non-remittance and all sampled households. But the key question here is whether this gap is created due to the additional income they generated from international remittance or the remittance receiving households were better-off even before sending a household member abroad. This will be discussed in the last section of the paper.

4.1.2 Summary & Descriptive Statistics for Explanatory Variables

In this section we describe those variables used for estimating consumption function and selection corrected equations. Here we have four categories of explanatory variables namely: household level human capital & demographics, household head characteristics, location and ethnicity. Where 'age of household head' the variable only included in the selection equation.

Household level human capital variables such as number of educated household members and number of adults in the household are expected to have positive contribution for household income and hence consumption per capita. This is due to the fact that households with more adults are more likely to generate higher income and hence higher per capita consumption expenditure given that those adult household members are engaged in income generating activity compared to households with less number of adults. Whereas the impact of household size on income is hard to determine a prior since it depends on the proportion of children in the household below and above 14 years of age. Likewise, household head characteristics such as age, education, gender and marital status are important variables in this model.

The level of household head's education has a direct impact on income and hence consumption per capita while the opposite is true if household head is single headed and /or female headed. Conversely the effects of marital status and age of household is unknown a prior, similarly differences on ethnicity may have an implication on household wellbeing and the variable location

will capture the differences in cost of living and type of economic activity the household head engaged and hence income and per capita consumption of the household.

Our first equation, probit function which shows the probability that a household has no migrant member abroad and hence does not receive remittances; among others are determined by human capital and demographic variables.

Among others there are two major opposing views on how number of adults and their level of education can affect the probability of producing migrants and hence receive remittance. According to the basic human capital model as stated by Todaro (1970) as discussed in our methodology, households with more educated members and more adults, have higher probability of sending migrants abroad and hence receive remittances as more educated people can have higher opportunity for employment and hence earn higher income abroad. Nonetheless, one can also argue the other way; where households with more educated members and more adults are comparatively well to do families; hence, these households have less appetite to send their families abroad for the purpose of receiving remittances. But it is hard to say that household size has a positive impact on the probability of migration and hence remittances. Similarly, location which is associated with economic opportunities and economic migration is very important. It is expected that compared to other urban areas cost of migration less in Addis Ababa than elsewhere in the country.

The last variable which affects the propensity of migration and hence remittances but not our objective function per capita consumption expenditure is age of household head. According to our survey, older household heads will identify our model. According to the literature, the households with older heads are more likely to produce more migrants because they have more household members in the category of adults (15 to 30 years). However, households with older ages are not expected to receive

more income even though expenditure (income) generally increases with the level of education, older household heads in Ethiopia are tend to be less educated based on our survey.

Table 2A in the appendix section, shows summary statistics of explanatory variables for actual and counterfactual for remittance receiving, non receiving and all sampled households. The explanatory variables for the counterfactual columns five and six take into account the migrant members as part of the household and hence these variables are used in the first stage selection regression and in calculating counterfactual consumption function for remittance receiving households. Similarly, the explanatory variables in the actual case scenario are used for actual consumption function.

Proportionately, remittance receiving households have more kids/children below the age of 5 & 15, less number of adults, and lower education level on average and have larger household size compared to non remittance receiving households in the actual scenario. While for the counterfactual case which takes into account migrant members, remittance receiving households have larger household size, more adults and have relatively higher level of education. Nevertheless, the number of children between the age of 5 & 15 in relation to the number of adults is more or less the same for both groups of households.

Households with female heads are larger for recipient groups and also have older heads on average though the level of education for the household head is similar in both groups. This similarity supports our previous argument that older heads are not necessarily expected to be educated. In the case of ethnic groups, around half of the remittance receiving households from the sample survey is *Amharas* and the second largest share goes to *Tigrian.* Both constitute more than three-quarter of the recipient group.

Addis Ababa and Mekelle account for more than 46 percent and 25 percent of all remittance receiving households respectively, while the smallest share only 13 percent goes to Hawassa. It is anticipated that the lion's share of households

who receive remittances comes from Addis Ababa this is due to the reason discussed above where as migration is a risky and costly activity, households from this city tend to send more migrants abroad compared to others.

4.2 Regression Results

As discussed in our methodology unit, the two stage Heckman Selection model is applied to construct the counterfactual consumption function for remittance receiving households. Hence the regression results which are used for constructing the counterfactual consumption function are presented first.

In the first stage probit function, the probability that a household does not have a migrant a broad and, hence, does not receive remittances (selection equation of no migration and hence no remittance) is applied for all households. In the second stage selection corrected counterfactual consumption function, the household human capital and demographic variables for the remittance receiving households are adjusted so that they will include the migrant members.

Hence, the results of the first stage probit function will be discussed first and then the consumption function for non remittance receiving households will follow.

The coefficients for the probit model (see Table 4 below) in the first stage equation do not give the marginal effects of the variable in question on the probability that a household does not produce migrants and hence, does not receive remittances. These marginal effects, however, can be readily computed by a standard transformation. It is these marginal effects from estimating the probit model that are reported in Table 4.

Table 4: Probit Model (Marginal Effect), Selection Controlled Regression used for Counter-factual Consumption Function

Variables	P (No migration & no remittance)	
No. HH members >15yrs primary education	-0.0840	(-1.01)
No. HH members >15yrs secondary education	-0.0632	(-1.03)

No. HH members >15yrs university education	-0.0564	(-0.99)
Household size	-0.356***	(-3.07)
R.kids/Proportion of kids<15 to hh size	1.832***	(3.05)
Number of adults	0.514***	(3.47)
Sex household head(1=male)	0.352***	(3.00)
Head has secondary Or higher education(1=yes)	-0.250*	(-1.90)
Gonder	-0.108	(-0.65)
Mekelle	0.395	(1.53)
Hawassa	0.271	(1.40)
Amhara	-0.0680	(-0.28)
Oromo	-0.179	(-0.65)
Tigre	-0.400	(-1.23)
Gurage	-0.176	(-0.54)
Old age_hh(1=yes, if age of household head>=50)	-0.647***	(-4.88)
cons	-0.0714	(-0.24)
N	590	

Note: the table reports the marginal effects of a variable on the probability of a household with no migrant member abroad and hence receive no international remittances. Figures in parentheses are t- values (Significant at * p<0.1, ** p<0.05, and *** p<0.01)
Source: Computed from own survey data, 2013
None of the ethnic and city dummies are statistically significant.

As it can be seen from the above table, most of the human capital variables are statistically insignificant. However, more educated household heads are more likely to receive international remittances. This might have resulted from the efforts made by the educated household heads, to beat the challenges of immigration cost. Hence, it is expected that they try hard to finance this activity in the short run and receive remittances in the long run. Likewise female headed households have higher probability of receiving remittances compared to male headed households. Larger family size is associated with higher probability of remittances while higher proportion of kids compared to adults in the household implies lower probability for migration and hence remittance. On the other hand, the number of adults in a family is positively correlated with no migration and no remittances.

Table 5: Annual per Capital Household Consumption Expenditure Estimates (Selection Corrected) for Non Remittance Receiving Households

Variables	Log of consumption per capital	
No. HH members >15yrs primary education	-0.0700	(-1.09)
No. HH members >15yrs secondary education	0.0138	(0.29)
No. HH members >15yrs university education	0.161***	(3.40)
Household size	0.102	(0.91)
R. kids/Proportion of kids<15 to household size	-0.656	(-1.13)
Number of adults	-0.292***	(-2.09)
Sex of household head(1= male)	-0.0346	(-0.32)
Head has secondary or higher education(1=yes)	0.236***	(2.63)
Gonder	-0.400***	(-3.24)
Mekelle	-0.709***	(-2.94)
Hawassa	-0.539**	(-3.90)
Amhara	-0.0278	(-0.17)
Oromo	-0.319*	(-1.69)
Tigre	0.505*	(1.84)
Gurage	-0.102	(-0.42)
Lambda	-0.472**	(-1.98)
Constant	9.854***	(30.48)
Prob > F = 0.0000		
R-squared = 0.2980		
Adj R-squared = 0.2583		
N = 299		

Note: Dependent variable is log of annual per capital household consumption expenditure (excluding remittances) which are used to construct counterfactual consumption for remittance receiving hhs. Figures in parentheses are t-values. * p<0.1, **p<0.05, ***p<0.01

Source: Computed using own survey data, 2013

Finally, older household heads are associated with higher probability of receiving remittances which is similar to our expectation. This variable age of household head is not included in the second stage consumption equation and hence identifies the selection equation.

Table 5 above shows the results for the ordinary least square (OLS) for the selection corrected consumption function estimates. As hypothesized earlier the human capital coefficient household members with university education has positive and significant coefficient and this implies that this variable has a positive effect on household income and hence on consumption expenditure as well. But, it is worth mentioning that number of adults has negative sign and statistically significant again this implies that higher number of adults leads to lower consumption. This may be due to the wider level of unemployment in the country especially in urban areas implying that most of the adults have no contribution to income. From the household head characteristics the number of household heads that have secondary or higher education is statistically significant implying that it has a positive contribution for household income and hence consumption per capita.

The most important finding in Table 5 is that Lamda is significant at 95% confidence interval and has a negative sign. This implies the existence of selection bias whereby the error term in the first equation in our probit function and second equation consumption function are negatively correlated indicating that unobservable factors that make participation less likely are tend to be associated with higher consumption function. This is consistent with the usual belief that migrant households are positively selected. Thus, OLS regression for the consumption function without taking into account the selection into consideration will bias the effect of remittance on consumption.

From the location dummy, Gonder, Hawassa and Mekelle are associated with lower consumption per capital compared to Addis Ababa. While the ethnicity dummy implies *Oromo* and *Tigre* have relatively lower and higher consumption per capital respectively compare to our reference group which includes ethnicity other than the four major ethnic groups.
Once we estimate the consumption function for non remittance receiving households, the values will be used to construct counterfactual consumption function for remittance receiving households.

Table 6: Regression to Estimate Predicted Per Capita Household Consumption Expenditure

Dependent variable 'log of per capital consumption expenditure'		
No. Household members >15yrs primary education	-0.0802**	(-2.04)
No. Household members >15yrs secondary education.	-0.0209	(-0.71)
No. Household members >15yrs university education.	0.0985***	(3.88)
Household size	-0.0154	(-0.28)
R.kids/Proportion of kids<15 to household size	0.105	(0.36)
Number of adults	-0.137**	(-1.99)
Sex of household head(1=Male)	0.0734	(1.29)
Head has secondary or higher education(1=yes)	0.264***	(4.49)
Gonder	-0.437***	(-5.48)
Mekelle	-0.403***	(-3.29)
awassa	-0.356***	(-3.89)
Amhara	0.142	(1.26)
Oromo	-0.0818	(-0.63)
Tigre	0.356**	(2.31)
Gurage	0.0135	(0.09)
treat_dummy(1=yes receive remittances)	0.161***	(3.08)
_cons	9.173***	(64.16)
N = 590		
Prob > F = 0.0000		
R-squared = 0.2898		

* p<0.1, ** p<0.5, *** p<0.01, t statistics in parentheses

Note: Regression is based on the whole sample remittance receiving and non receiving households; the dependent variable is log of annual per capita household consumption expenditure. Parameters from the regression are used to predict annual per capita household expenditure (excluding remittances) for households which receive international remittances.

Source: Computed using own survey data, 2013

To construct actual consumption for remittance receiving households, we run an Ordinary Least Square (OLS) regression on the whole sample from which we predict the actual and counterfactual consumption function.

Table 6 above, reports the results obtained from using equation (13) to predict per capita household expenditure for both remittance receiving and non receiving households. Most of the coefficients have the right sign and level of significance; only the outcomes for the human capital variable primary education has unexpected sign and merit discussion. This unexpected result suggests that returns to education in the local employment for the lower levels of education are low (and possibly negative).

The variable 'treat_ dummy' which shows whether a household has a migrant member abroad and hence receive remittance or not is highly significant. The coefficient for this dummy shows that households which receive international remittances have on average 16.1 percent higher per capita consumption than those who don't receive. This is consistent with the results of our descriptive statistics as discussed in the previous section.

To see the effect of international remittances on poverty the Foster-Greere-Thorbecke (hereafter FGT) poverty index (1984) is used. The FGT poverty measure is defined as:

$$FGT_{\propto} = \frac{1}{N} \quad \sum_{i=1}^{h} \left(\frac{p-yi}{h}\right)^{\propto}$$

Where 'N'= total number of households, 'p' is the poverty line, 'h' is the total number of households living under the poverty line, and y_i represents the income of a family below the poverty line.

The three variants (depending on three values of α) of the poverty index used to estimate the impact of changes in international remittances on poverty are: first headcount index (α=0) measures the share of the population living below the poverty line. Second poverty gap index (α=1) measures the depth of poverty, that is the amount by which an average poor family is below the poverty line. Lastly we have poverty gap squared index (α=2) which measures the severity of poverty and, unlike the other two measures, it is sensitive to changes in the distribution of income among the poor.

The poverty line set by Federal Democratic Republic of Ethiopia the ministry of finance & Economic Development, "Ethiopia's progress towards alleviating poverty: Interim report on 2010/11 poverty Analysis", is used in this paper. The poverty line set by this report was computed based on the 1995/96 poverty line. To do so groups of consumption items defined in 1995/6 which generate 2,200 kilo calories were valued at 2010/11 national average price in order to obtain total urban poverty line and defined to be 3,781 Birr.

In this paper, we tried to adjust the above total poverty line constructed for urban areas by adjusting the rate of inflation between 2010/11 and 2011/12 hence the total poverty line became 5,293 Birr considering a 40 percent annual average rate of inflation during the period based on the 2012 World Bank report on the Ethiopian Economy. The three poverty indices are calculated using household consumption per capital adjusted by equivalence scale. The equivalence scale used takes into account the fact that children cost less than adults and there is economies of scale in consumption. This can be given as follows:

$$\in = (A + \alpha C)^{\theta}$$

Where $'\in'$ is Equivalence scale, 'A' is numbers of adults in the household, 'C' is number of children, $'\alpha'$ cost of children relative to adults and $'\theta'$ measures economies scale. For poor countries like Ethiopia different literatures indicate that the cost of children relative to adults is very low while economies of scale is very high. Implying that 'α' is low while $'\theta'$ is very high. α and θ are respectively set to be 0.5 and 0.95 following Kedir and Disney (2004) as stated in Berhe (2012).

Table 7: Summary statistics of Monthly per capita consumption expenditure for actual and counterfactual for remittance receiving, non receiving and all sampled households

Variable	Mean	Std. Dev.

Remittance receiving households (Actual)	1026	384
Non Remittance receiving households(Actual)	830	372
All Sampled households(Actual)	931	390
Remittance receiving households (Counterfactual)	258	166
All Sampled households(counterfactual)	264	168

Source: Computed from own survey data, 2013.

Table 7 sums up the actual and counterfactual per capita household consumption expenditure for remittance receiving, non recipient and all sampled households. Two key findings emerge: first, in the counterfactual scenario in the absence of remittances households which used to receive remittances are poorer when compared to non-recipient households. In this scenario, the average level of expenditure for households receiving remittances is 2.3 percent below all sampled households. The second finding is in the case of actual scenario including remittances the average level of per capita consumption expenditure for remittance receiving households is quite higher compared to non remittance receiving households. Hence, average level of per capita consumption expenditure is 23.6 and 10.2 percent higher respectively than that of the households not receiving remittances and for all sampled households.

The table below shows the effect of international remittances on poverty. The different measures of poverty such as head count, poverty gap and squared poverty gap indicate a considerable decline in poverty among those who receive remittances. The poverty head count measures reduce the level of poverty from 30.4 to 10.9 percent implying that poverty declines by 64 percent in the actual case compared to counterfactual scenario. It is also equally important to note that poverty gap, which is measured in terms of percentage, shows how far the average expenditures of the poor fall short of the national poverty line reduces by 67 percent, slightly higher than the reduction in poverty head count. In contrast to head count poverty and poverty gap, poverty is reduced at higher rate when measured by more sensitive measure: squared poverty gap. For example, the squared poverty gap measure shows that including international remittances in household

consumption expenditure (income) does reduce the severity of poverty by 70 percent. These results suggest that international remittances reduce the severity of poverty more than absolute poverty.

Table 8: Effect of remittances on poverty for International remittance receiving households

		Households receive International remittances	Households receive no International remittances
Poverty head count (%)			
Actual		.109	.211
Counterfactual		.304-	-
Differences	↓	.195 (64%)	
Poverty gap (%)			
Actual		.002	.005
Counterfactual		.006	
Differences	↓	.004(67%)	
Poverty square gap (%)			
Actual		.00006	.0002
Counterfactual		.0002	
Differences	↓	.00014 (70%)	
N		293	299

Source: Computed from own survey data, 2013

The poverty levels in the counterfactual case for remittance receiving households is significantly higher compared to non remittance receiving households which is 21 percent, implying that poverty was higher among those recipients of remittances compared to non receiving groups prior to migration. But in the actual case the level of poverty is lower for remittance receiving groups compared to non-receiving implying how important international remittances are in lifting up urban households from poverty to a relative prosperity in Ethiopia. For example in our survey, out of the 293 households that receive remittances, 89 of them were living below poverty line in the counterfactual case (before they start to receive remittances) but in

the actual case including remittances, the number of households living beneath the poverty line declined to 32 households, implying that 57 households were lifted out of poverty. The effect of international remittances on the whole sample is reported in the following table.

Table 9: Effect of International Remittances on Poverty for All Sampled household

All Sampled Households		
Poverty head count (%)		
Actual		.160
Counterfactual		.282
Differences	↓	.122(43.2%)
Poverty gap (%)		
Actual		.004
Counterfactual		.006
Differences	↓	.002(33.3%)
Poverty square gap (%)		
Actual		.0001
Counterfactual		.0002
Differences	↓	.0001(50%)
N		592

Source: Computed from own survey data, 2013

Table 9 above shows, the level of poverty reduction among both remittance receiving and non receiving groups of households where in the counterfactual case head count poverty declining from 28.2 to 16 percent, indicating the level of poverty declines by 43.2 percent. Similarly, the poverty gap and poverty square gap decline significantly by 33.3 and 50 percent respectively.

For further illustration of our finding that international remittances have a significant impact on reducing the depth and severity of poverty in urban Ethiopia, Table 10 below examines the kinds of expenditure (income) groups of households that receive international remittances.

For instance, if greater proportion of household's consumption expenditure is covered through international remittances or if households at the bottom of consumption expenditure are receiving more international remittances compared to other consumption groups, hence, it is clear that international remittances are having greater impact on poverty.

To pursue this analysis, all households (both remittance recipient and non recipient) are ranked in to quintile groups on the basis of actual per capital household consumption expenditure including remittances. The first column shows the proportion of total households which receive international remittances in each quintile group. For remittance receiving households the second column shows the percent of total per capital household expenditure including remittances coming from international remittances to each quintile group.

Table 10: Distribution of remittance receiving households by Quintile group, ranked by per capita consumption expenditure including remittances

Rank	Proportion of remittance receiving Households		International remittance as percent of total household expenditure
Lowest	20	15%	82%
Second	20	18%	58%
Third	20	22%	68%
Fourth	20	23%	65%
Fifth	20	22%	64%
		100%	

Notes: Households ranked into quintile groups on the basis of observed per capita household expenditure (including remittances). For those households receiving international remittances, column (3) shows the percent of remittance receiving households from the whole sample while column (4) shows the percent of total per capita household expenditure (including remittances) coming from international remittances.

Source: Computed from own survey data, 2013

Similar to our expectation, the first column of the above Table 10 indicates that only 15 percent of the remittances receiving households are among the poorest households, while more than 55 percent are among those in fourth and fifth quintile indicating the rich households. It is also equally important

to realize that the last column, of the same table, demonstrates that the poorest households that are found in the lowest quintile group receive very large shares of their total per capital household expenditure from remittances. For example for the lowest quintile group, on average households receive 82 percent of their total household consumption expenditure from international remittances, in the same way, for the second quintile it is 58 percent.

Given the above points, we can deduce here again that international remittances reduce the depth and severity of poverty in urban Ethiopia. This is due to the fact that poor households are receiving a greater portion of their income from international remittances.

4.3 Impact of International Remittances on Household Consumption and Investment: Evidence from Descriptive Statistics

4.3.1 Household Expenditure patterns between those who Receive and do not Receive Remittances

The summary statistics of Table 11 below shows household expenditure patterns of all sampled households. There is statistically insignificance difference between households that received international remittances and that did not received the same in terms of consumption expenditure on food, other non durable consumer goods (such as groceries like cleaning products, toiletries, clothing and shoes etc) and household services (such as transport expenses including public transportation, gas/maintenance of car/bike/brike, electricity and cooking fuels (petrol/gas/charcoal/wood) etc).

While comparing both groups of households in terms of household investment such as expenses on health and education some differences is exhibited. Comparing health expenses, between the two groups of households, there is statistically significant difference in both groups of households; where non remittance receiving households spend more than

twice that of remittance receiving households. More or less expenditure on education is similar for both groups of households.

Table 11: Expenditure patterns of households

Household Consumption expenditure	Remittance Receiving HHs		Non-Remittance Receiving HHS		Difference in Mean		P-Value
	Mean	Std.Er	Mean	Std.Er	Mean	Std.Err	
Food consumption	5443	298	5361	542	-82	627	0.90
Other Consumer goods & service	2484	361	2088	348	-396	502	0.43
Household services: energy water, and telephone	967	74	1322	373	356	381	0.35
Education	1488	182	1550	435	62	455	0.90
Health	684	105	1478	771	794	720	0.27

Source: Own Data Survey, 2013

4.3.2 How international remittances are spent by remittance receiving households?

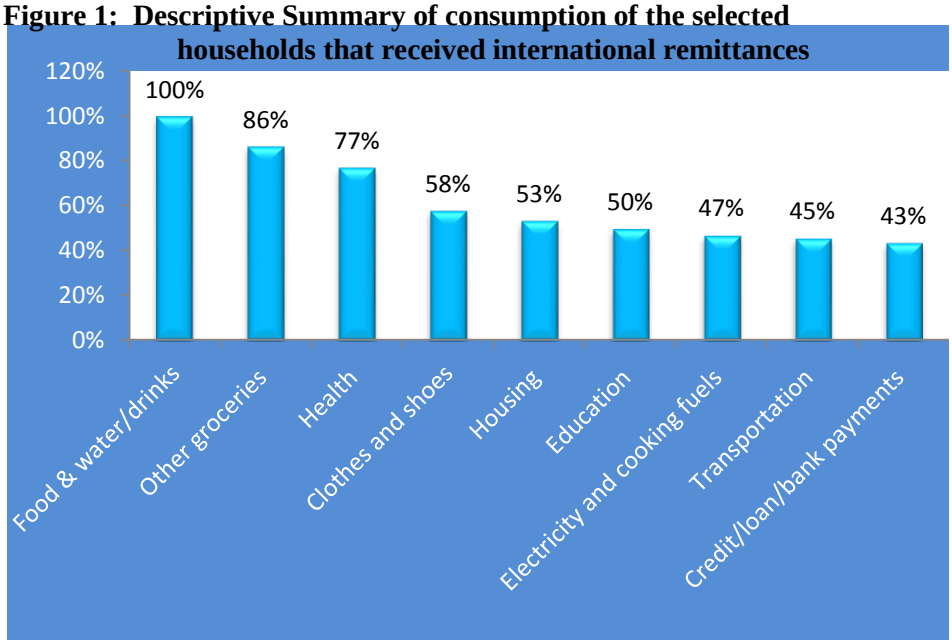
How international remittances are being used by households, among others, may be directly related with the well being of households. It is more convincing that poorest households are more likely to use a relatively higher share of remittance income for subsistence items such as food and clothing. Nevertheless the opposite is true for the relatively better-off households, where the largest share of remittances were mainly used for financing productive assets.

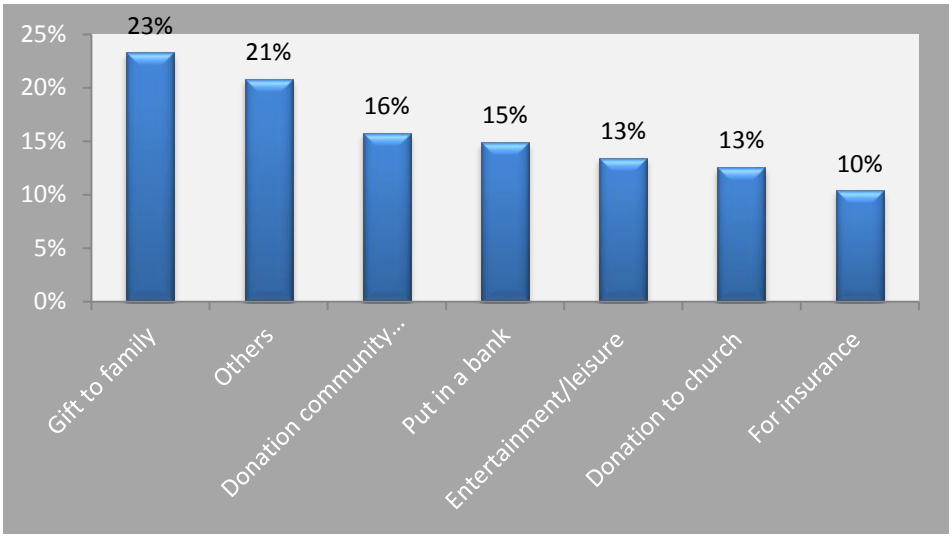
In our survey, based on our discussion in the previous sections, remittance recipient groups are relatively poorer compared to non-recipient groups in the counterfactual scenario; hence it is obvious that substantial portion of it is spent on food and other consumption goods than investment goods. Nonetheless, this should not be meant that every income is spent on

consumption. On the contrary, a significant portion of remittance is also used for human capital accumulation, namely health and education, and physical investment such as housing.

To illustrate based on Figure 1 below, all remittance receiving households (100%) had spent some fraction of their income on consumption goods specifically on food. This implies that some portion of every penny obtained from remittance was spent on food consumption. Likewise, considerable share of remittances was also spent on physical investment such as housing. For instance from the same figure, more than three quarter of remittance receiving households had used part of their remittance income to cover health expenses. A little bit more than 50 percent of this group had used part of their remittance for housing/physical investment/ and human capital accumulation namely, education. Finally, many migrant sending households do not have savings. Indeed, given the low income of many households, it is not all surprising that only 15 percent of those remittance receivers had saved part of their remittance income in financial institutions, i.e. banks.

Figure 1: Descriptive Summary of consumption of the selected households that received international remittances





Source: Computed from own survey, 2013

The above figure also showed none of the remittance receiving households used part of their remittance income to invest in entrepreneurial or other income generating activities such as on small and microenterprises. But encouragingly around 50 percent of those households used part of remittance income for physical investment such as housing (either for renewal or construction/acquiring of new residential houses).

This result seems to be reasonably consistent with a number of studies conducted in a range of countries, according to Gammeltoft (2002), and Taylor (1998), for some countries not less than 80 percent of remittances spent on consumption, while smaller share of it was invested in land, housing, or new productive investments even though, investment in new productive assets can accelerate long-term economic growth.

Possible explanations why international remittances were mainly geared towards consumption than investment are: first lack of consistent and progressive in flow of remittances. According to our survey more than 60 percent of the remittance receiving households got remittance less than three

to four months per annum and there is high variability in the inflow of remittances. The second and main reason is that the purpose for sending remittances by remitters is primarily to cover household consumption expense than investment as most of the remittance receiving households were relatively poor compared to non remittance receiving households in the counterfactual scenario.

4. Conclusion

To assess the impact of international remittances on poverty, household consumption and investment in urban Ethiopia, this study used primary household survey data collected from four major urban areas of the country namely Addis Ababa, Gonder, Hawassa and Mekelle.

Heckman two stage selection model was employed to evaluate the impact of international remittances on poverty. The reason for adopting this methodology is to control the problems of selectivity and endogenity.

We used counterfactual consumption estimates for remittance receiving households in the absence of remittances. This is estimated from selection corrected consumption function of non remittance receivers. To control selection bias, the paper used a two-stage Heckman selection model. The extent of selection was found to be negative and statistically significant implying that non remittance receiving households were negatively selected in their unobservable characteristics.

The study finds that international remittances substantially reduced the level, depth and severity of poverty among remittance recipient groups and the whole sample. For the sub sample of households which received remittances poverty head count index, poverty gap and squared poverty gap declined by 64 percent, 67 percent and 70 percent respectively. While for the whole sample it was reduced by 43 percent, 33 percent and 50 percent respectively.

When we compare the level of poverty in the counterfactual case (excluding remittances) between the two groups of households: remittance receiving and non receiving households, the level of poverty were higher for the former which is 30 percent while only 21 percent for non remittance receiving households. However, in the actual case including remittances poverty declined to 10.9 percent for remittance receiving households implying how important remittances are in reducing poverty in Ethiopia. To explain further based on our survey 89 out of the total 293 remittance receiving households were poor in the counterfactual case. But in the actual case when remittances are included, the number of households living beneath the poverty line declined to 32, implying that 57 households are lifted out of poverty. This finding also implies that poor urban households can and do produce international migrants.

We have two justifications for the findings of our study : First, based on the survey data around 44 percent and 68 percent of the total income and total consumption expenditure of the remittance receiving households is generated from international remittances respectively, this shows a considerable share of household's income is covered using income from remittances. Second, ranking households into quintile groups on the basis of per capital consumption expenditure including remittances indicates that households in the bottom quintile group received around 82 percent of their total household consumption expenditure from international remittances.

Evidence from Heckman two stage selection model revealed that compared to the counter factual scenario per capital consumption expenditure for remittance receiving households significantly increased and hence, the level of poverty has declined meaningfully.

Hence the above findings of this study seems to plausibly fit with the vast majority of empirical studies conducted in different countries such as in Ghana by Adams (2006); in Indonesia by Adams & Cuecuecha (2010) and others which found out that remittances have played a positive role in

reducing poverty and enhancing welfare of households. However, there are also some empirical studies which proved the other way such as Wouterse (2008) in Burkina Faso, where remittances do not significantly reduce poverty rather aggravates income inequality.

Another key finding of the study on how international remittances are spent by recipient household using descriptive evidence shows that all remittance receiving households spend part of their remittance income mainly on consumptions goods such as food. Yet, significant numbers of households are also used part of it for investment such as health, education and housing. However; relatively insignificant numbers of households save part of the remittance income. But none of them used it to invest in entrepreneurial or other income generating activities. In conclusion international remittances are mainly spent on consumption than investment goods. In light of our review of the literature, this finding is not in line with the dominant view that remittances are fungible and spend like any other source of income such as a study by Adams, Cuecuecha & Page (2008) in Ghana. Whereas it agrees with studies like Chami et.al (2003), which deduced that remittances are dominantly spent on consumption and are not channeled towards productive long term investment.

The possible explanations why international remittances are mainly geared towards consumption than investment in the selected urban areas is: first lack of consistent and progressive inflow of remittances. According to our survey more than 60 percent of the remittance receiving households got remittance less than three to four months per annum and there is high variability in the inflow of remittances. Second the main purpose for sending remittances by remitters is primarily to cover household consumption expense than investment as most of the remittance receiving households were relatively poor compared to non remittance receiving households in the counterfactual scenario.

The survey result also shows that comparing expenditure patterns of both groups of households, there is non-statistically significant difference in terms of expenditures on non durable goods such as food. But clear difference exits in expenditure patterns on health expenses, where non remittance receiving households spend more than twice on health compared to remittance receiving households.

In general, the findings suggest that remittances can be used as a tool to fight poverty in Ethiopia considering the fact that remittances had effect on poverty. Therefore this study can be used as an input to formulate policies associated with migrant remittances as they play a crucial role in reducing poverty in Ethiopia.

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Appendix

Table 1A: Variables used for the estimation of the model

Variables	Description
Log of per capital consumption expenditure (Dependent Variable)	Logarithm of annual per capital household consumption expenditure
Human Capital Variables	
No. HH mems > 15yrs prim educ.	Number of household members who have completed primary education
No. HH mems > 15yrs seco. educ.	Number of household members who have completed secondary education
No. HH mems > 15yrs univ. educ	Number of household members who have completed University education
Household Characteristics	
No. Child<=5 years old	Number of children less than 5 years of age
No. Child 5-15 years old	Number of Children between the age of 5 and 15 years
Number of adults	Number of adult household members
Household size	Number of people in the household
Household Head Characteristics	
Sex of household head (1=male)	Dummy for sex of household head (1=male)
Old age of head (1=yes)	Age of household head in years (>=50 yrs)
Head has primary education	Dummy for household heads who have completed primary education
Head has secondary education or higher (1=yes)	Dummy for household heads who have completed high school or higher education
Ethnicity (control group: other ethnic groups)	
Amhara	Dummy for Amhara households
Oromo	Dummy for Oromo households
Gurage	Dummy for Gurage households
Tigre	Dummy for Tigre households
Location (control group: Addis Ababa)	
Hawassa	Dummy for households from Hawassa
Gonder	Dummy for households from Gonder
Mekelle	Dummy for households from Mekelle
Treatment dummy	
treat_dummy (1=yes)	Dummy for households who receive international remittance (1=yes)

Table 2A: Summary of Explanatory variables for actual & counterfactual consumption regression for remittance, non receiving and all sampled households.

Variables	Actual Scenario			Counterfactual scenario	
	Remittance Receiving HHs	Non remittance Receiving HHs	All Sampled HHs	Remittance Receiving HHs	All Sampled HHs
Human capital variables					
No. HH mems>15yrs prim educ.	0.39(0.64)	0.40(0.72)	0.39(0.69)	0.40(0.73)	0.39(0.69)
No. HH mems>15yrs seco educ.	0.96(1.06)	1.07(1.11)	1.02(1.09)	2.07(1.11)	2.02(1.09)
No. HH mems>15yrs univ educ.	0.85(1.12)	1.00(1.36)	0.93(1.25)	1.00(1.36)	0.93(1.25)
Household Characteristics					
Household size	4.26(1.93)	4.12(1.78)	4.19(1.86)	5.27(1.93)	5.19(1.86)
No. Child <= 5yrs old	0.30(0.53)	0.28(0.60)	0.29(0.57)	0.27(0.58)	0.29(0.56)
No. Child 5-15 yrs old	0.72(0.89)	0.71(1.02)	0.72(0.96)	0.71(1.02)	0.71(0.95)
Proportion of kids to adults	0.20(0.23)	0.23(0.21)	0.22(0.22)	0.23(.22)	0.22(0.22)
Number of adults	3.09(1.56)	3.28(1.56)	3.19(1.56)	4.28(1.56)	4.19(1.56)
Sex of household head(1=Male)	0.52(0.50)	0.63(0.48)	0.48(.49)	0.63(.48)	0.48(.49)
Head has Prim. Education(1=yes)	0.82(0.38)	0.80(0.40)	0.81(0.39)	-	
Head has Seco. Education(1=yes)	0.58(0.50)	0.58(0.50)	0.58(0.49)	-	-
Location					
Gonder	0.16(0.37)	0.21(0.41)	0.19(0.39)	-	-
Mekelle	0.25(0.44)	0.24(0.43)	0.25(0.43)	-	-
Addis Ababa	0.46(0.50)	0.44(0.50)	0.45(0.50)	-	-
Hawassa	0.13(0.34)	0.11(0.31)	0.12(0.33)	-	-

Variables	Actual Scenario			Counterfactual scenario	
	Remittance Receiving HHs	Non remittance Receiving HHs	All Sampled HHs	Remittance Receiving HHs	All Sampled HHs
Ethnicity					
Amhara	0.49(0.50)	0.47(0.50)	0.49(0.50)	-	-
Oromo	0.11(0.32)	0.11(0.32)	0.11(0.32)	-	-
Tigrian	0.27(0.44)	0.29(0.46)	0.28(0.45)	-	-
Gurage	0.05(0.22)	0.06(0.23)	0.05(0.23)	-	-
other	0.08(0.28)	0.07(0.25)	0.07(0.26)	-	-
old_age household head	0.53(0.50)	0.35(0.48)	0.44(0.49)	0.35(.47)	-
Observations	328	308	636	328	636

NB. Standard deviations are given in parenthesis

Source: Computed from own survey data, 2013