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Remittances and Household Welfare: Longitudinal Evidence from Urban Ethiopia

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"Remittances and Household Welfare: Longitudinal Evidence from Urban Ethiopia."

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List of Acronyms

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

ODA: Official Development Assistance

SSA: Sub Saharan Africa

USD: United States of America Dollar

NGOs: Non Governmental Organizations

EUSES: Ethiopian Urban Socio Economic Survey

LDCs: Least Developed Countries

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Abstract

Two views are raised on the impact of remittances at the household level. The first view contends that remittances directly augment the income of recipient households and provide financial resources, increased household investments in education, entrepreneurship, and health. However, the second view states that remittances might have negative incentive effect which results in an increased in reservation wage and reduction in labor supply. The study examined the impact of remittances on household welfare, selectivity bias with regards to migration and remittances, and how households allocate the remittances they received from different sources.

Using the Ethiopian Urban Socio Economic Survey, descriptive and econometric methodologies are adopted. The main findings include: the amount of receipt from domestic and international sources increased during the study period, remittances are primarily used for consumption followed by expenditure for schooling. It is found that there is no selectivity bias with regards to migration and recipient of remittances. The result also confirmed that the predicted per capita annual expenditure of remittance recipient households is higher than households that do not receive remittance in both the including remittances and no remittance scenarios. Finally, panel data model is estimated and the result materializes the welfare improving impact of remittances on the welfare of recipient households.

Therefore, designing policies that increase the inflow and usage of remittances are vital. Policies include: improving the operation and service of financial institutions, providing incentives and training for remittance recipients will further increase the contribution of remittances to household's welfare.

Chapter One

Introduction

1.1 Background of the Study

In the context of developing countries people migrate from rural to urban areas and to other developed countries looking for better economic opportunities for them and for their families.

The United Nations estimates that migrants account for some 3 percent of the world's population, or about 175 million persons. The stock of immigrants to high income countries increased at about 3 percent per year from 1980 to 2000, up from the 2.4 percent pace in the 1970s (Global Economic Prospects, 2006).

Both internal and international migrants are the source of finance for families back home in the developing world. For many developing economies, international remittances constitute the single largest source of foreign exchange, exceeding export revenues, FDI, and other private capital inflows. Moreover, remittances have proved remarkably resilient in the face of economic downturns and crises (World Economic Outlook, 2005).

International remittances are an increasingly significant source of external financing for developing countries. Over the past decade they have emerged as the second largest source of net financial flows to developing countries. The total volume of remittances to developing countries in 2001 was $72.3 billion, nearly one and half times net ODA in that year ($52 billion) and almost half net private flows (FDI plus debt flows) of nearly $153 billion(Kapur, 2004). Total remittance inflows grew five-fold between 1980 and 2003 to reach $91 billion, or 1.6 percent of developing countries' GDP—an amount not far short of total inward FDI, and larger than all

other private capital inflows (world economic outlook, 2005:72). In 2006, recorded remittances sent home by migrants from developing countries reached $206 billion, up from $193 billion in 2005 and more than double 2001's level (Ratha, 2007).

According to Global Economic Prospectus (2006), recorded remittance receipts were equivalent to about 6.7 percent of developing countries' imports and 7.5 percent of their domestic investment. They were also larger than official flows and private equity (non-FDI) flows in 2004. At a regional level, the Western Hemisphere and developing Asia in particular have experienced a major increase in remittance inflows, and currently account for the bulk of total remittance receipts (World economic outlook, 2005). Among developing countries, China, India, Mexico, and the Philippines were among the top recipients (Global Economic Prospects, 2006).

The inflow of remittance to Sub-Saharan Africa has been part of the increasing global trend. Remittances to SSA have increased by over 55 percent in U.S. dollar terms since 2000, while they increased for developing countries as a group by 81 percent. However, the recorded remittances are only a small fraction of total remittances to SSA. In 2005, remittances to the 34 SSA countries were estimated to be about US $6.5 billion. Remittance flows to SSA are relatively small, 4 percent of total remittances to developing countries and just 33 percent of those to India, which received the most. In contrast, countries in Latin America and the Caribbean received 25 percent of all remittances, as did the countries of the East Asia and Pacific region (Gupta et al., 2007).

Gupta et al. (2007) states that remittances to SSA are about 2.5 percent of GDP compared to almost 5 percent for other developing countries. However, there are striking exceptions in SSA. In particular, remittances were almost 28 percent of GDP in Lesotho, and more than 5 percent in Cape Verde, Guinea-Bissau, and Senegal. The largest recipients of remittances in the region are Kenya, Nigeria, and Senegal.

In Ethiopia people relocate their residence from rural to urban areas looking for better living conditions like better wage and facilities in towns and cities. International migration in the Ethiopian context is increasing starting from the late 1970's, which is the result of the political instability at that time. Nowadays, so many Ethiopians, skilled and unskilled, cross border to different countries legally and illegally looking for better economic opportunities. The main destinations for Ethiopians are North America, Europe, and the Middle East(Aredo,2005).

The inflow of international remittances to Ethiopia exhibits an increasing trend. According to the data from National Bank of Ethiopia, the amounts of remittances recorded in 1996/97 were around 855 million Ethiopian Birr. This figure increased to 9.3 billion Ethiopian Birr in 2006/07 fiscal year. This figure only shows the official transfer. However, there is unofficial transfer that may increase the figure by more than double.

1.2 Statement of the Problem

There are different views about the impact of remittances on a given economy at micro and macro level. At the household level remittances directly augment the income of recipient households. Ratha (2007) states that in addition to providing financial resources for poor households, they affect poverty and welfare through indirect multiplier effects and also macroeconomic effects. Remittances are associated with increased household investments in education, entrepreneurship, and health—all of which have a high social return in most circumstances. Studies based on household surveys in El Salvador and Sri Lanka find that children of remittance-receiving households have a lower school dropout ratio and that these households spend more on private tuition for their children. In Sri Lanka, the children in remittance-receiving households have higher birth weight, reflecting that remittances enable households to afford better health care. Several studies also show that remittances provide capital to small entrepreneurs, reduce credit constraints, and increase entrepreneurship.

The positive effects of remittances at the household level are clear, although not always undisputed. Unlike government to government aid, most remittances go directly to the family budget and are often used for basic subsistence needs and better housing. They thus contribute to family welfare and higher levels of living. Increased expenditure on food and housing and rising levels of living, combined with better knowledge on health and hygiene, often lead to improved productivity and development of human capital, as was found for example in Pakistan and the Pacific Islands (Ghosh,2006).

Unlike foreign aid, remittance flows do not put any burden on taxpayers in rich countries. Nonetheless, they occur only to the extent that emigrants from poor countries can work in richer countries. The critical difference between foreign aid and remittances is that the former consists of transfers from public entities in the donor country to public agencies in receiving countries and even when it is directed to civil society actors such as NGOs, it goes to organized entities. Remittances of course, simply go directly to households and in that sense their immediate poverty alleviation impact, through increased consumption, can be greater than traditional foreign aid, depending on the income characteristics of the receiving household. The transaction costs are lower and there is less leakage to rent seeking bureaucracies and consultants (Kapur, 2004).

However, remittances are not an unmixed blessing; they also have their downside. The positive effects of remittances on household welfare and foreign exchange can be somewhat neutralized when remittances lead to ostentatious consumption in remittance-receiving households, and encourage imports of luxury goods adding to pressure on the country's import bill (Ghosh, 2006). In communities heavily dependent on remittances, a culture of dependency often sets in. In a variety of contexts it has been observed that household members simply stop working and wait from month to month for the overseas remittance. Such negative incentive effects, a form of moral hazard, also results in an increase in the reservation wage. Young men and women prefer to remain unemployed and wait for the possibility that they themselves will migrate, rather than take up jobs at the local market-clearing wage. That remittances increase consumption much faster than production, raises issues of long-term sustainability, given an inevitable decline as

migrants settle in new communities and links with their home communities gradually erode (Kapur, 2004).

There are also important costs associated with the act of migrating if it possible that migrants do not come from the lowest quintiles of the income distribution and therefore remittances do not flow towards the poorest (Acosta et al., 2007).

At the same time, at the macro level remittances can dampen the country's exports if they lead to an appreciation of the external value of its currency (Ghosh, 2006). If remittances are relatively large, and a large share is spent on non-tradable, housing and land are particularly favored; the country is likely to suffer Dutch disease effects. Effectively this results in an appreciation of the real exchange rate, rendering exports less competitive. The country's principal export could become the cheap factor, labor rather than labor intensive products. At an aggregate level remittances constitute a form of rents. Exporting products requires painstaking effort to build the institutions and infrastructure that helps develop the necessary productive capacity (Kapur, 2004).

Therefore, this study tries to answer the following research questions. Which group of households receives remittance? How households allocate the remittances they received from their family members? What is the impact of remittances on household's welfare in the context of urban Ethiopia? To what extent remittances improve the wellbeing of the poor in urban Ethiopia?

1.2 Objectives of the Study

The general objective of this paper is to examine the impact of remittances on household's welfare and poverty reduction in urban Ethiopia. The specific objectives of this study are as follows:

- To identify which group of households receives remittance and to check whether there is selectivity biases with regards to migration and recipient of remittances.
- To investigate how remittance-receiving households allocate remittances.
- To examine how international and internal remittances affect the welfare of households in urban Ethiopia.
- To present policy recommendations.

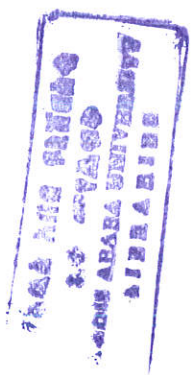
1.3 Hypothesis

Base on the problems and objectives of the study stated above the following hypotheses are presented and tested. The hypotheses that are presented in this study include: Remittances are expected to improve the welfare of recipient households as compared to non remittance receiving households. It is also expected that remittances are mainly utilized for consumption by the majority of the households. In addition to this selectivity bias is expected in producing migrants and receiving remittances.

1.4 Significance of the Study

This study focuses on the impact of remittances on household welfare in urban Ethiopia. The study uses the Ethiopian Urban Socio Economic Survey conducted by the Department of Economics, Addis Ababa University. Based on this survey the study tried to asses the effect of remittances on the wellbeing of the urban community. The inflow of remittances from abroad and transfer from urban to rural areas will assist the poverty reduction process. The study tried to see the welfare improving effect of remittance which will be helpful in designing policies related to reducing poverty.

Moreover, a study which analyzes the impact of remittance on the poverty status of households contributes a lot to design appropriate policy to increase the inflow of remittances for instance through creating favorable investment environment, improving the financial service. A considerable amount of transfer is through the informal channel in third world countries like Ethiopia due to various reasons. Studies like this which uses household data can capture both the formal and informal transfer so that it is possible to see the impact of remittances on household's welfare/poverty level and to come up with appropriate policy recommendations. It has also an implication on the improvement of the financial infrastructure to increase the inflow of remittances through the formal channel.



1.6 Limitations of the Study

The study is based on the Ethiopian Urban Socio Economic Survey (EUSES) conducted by the Department of Economics, Addis Ababa University in collaboration with different organizations. The limitation of this study is the attrition rate ,especially for the last two waves namely 2000 and 2004.This is due to the time gap in between the waves which leads to change in residence of respondents that. makes difficult to trace them. But the unbalanced panel is used for the estimation where in this case observing a given individual more than two times makes it possible to come up with reasonable estimation results. It is also difficult to take the survey as a representative survey in a country wide. However, the survey is representative to socio economic condition of urban Ethiopia.

1.7 Organization of the Study

This paper is organized as follows .In chapter two theoretical and empirical literatures are reviewed. In this chapter different motivations to remit are revised. Methodology and estimation techniques are presented in chapter three. The theoretical measure of welfare and the econometric method of estimation are discussed in this part. Chapter four includes the descriptive and econometric results. Detailed discussions of the results are presented in this chapter. The final chapter deals with conclusion and policy recommendations.

Chapter Two

Literature Review

2.1 Conceptual Framework

2.1.1 Micro Economic Theories of Remittance

Migrant remittances are defined broadly as the monetary transfers that a migrant makes to the country of origin, i.e., financial flows associated with migration. Most of the time, remittances are personal, cash transfers from a migrant worker or immigrant to relatives in the country of origin. They can also be funds invested, deposited or donated by the migrant to the country of origin. The definition could possibly be altered to include in-kind personal transfers and donations. Some scholars go further to include transfers of skills and technology as well as social remittances (Baruah, 2006).

The literature on remittance includes micro economics of remittances and macroeconomics of remittances. There are different microeconomic theories of remittance that justifies the motivation to remit by migrants to families back home. These include altruism, insurance/risk sharing, portfolio/investment, strategic behavior, exchange and self interest.

In this section theory of altruism, insurance/risk sharing, strategic motive, self interest and exchange motives are revised because these are the summary of all the theories that are stated by different authors.

2.1.1.1 Altruism Motive

Migrants can be seen as acting altruistically, sending money and other forms of support to increase the welfare of family members: spouse, children, parents and members of large kinship and social circles (Vanwey, 2004).

To discuss the altruism motive to remit we use the standard utility theory as stated in Rapoport and Docquier (2006). For the sake of simplicity we consider only two agents: the household (h) and the migrant (m) which can consist of one or more individuals. Utility is denoted by (U), pre-transfer income by (I), consumption (C), amount of transfer (remittances) by (T) which is remitted by migrants to households. The model accounts for both unilateral and mutual altruism. Each agents utility U^i, i=m, h is assumed to be affected by the satisfaction derived from her own consumption, V (C^i), with $V' > 0$ and $V'' < 0$, and the utility of the other.

Utility may be expressed as a weighted average of these two elements, with $0 \leq \beta^i \leq 1/2$ denoting the individual degree of altruism or it is a weight of altruism.

$$U^m(C^m, C^h) = (1-\beta^m)V^m(C^m) + \beta^m U^h(C^h, C^m) \quad [1]$$

$$U^h(C^h, C^m) = (1-\beta^h)V^h(C^h) + \beta^h U^m(C^m, C^h) \quad [2]$$

After solving these equations and some algebraic manipulation the migrant's utility function can be written as

$$U^m(C^m, C^h) = (1-\gamma^m)V(I^m - T) + \gamma^m V(I^h + T) \quad [3]$$

Maximizing [3] with respect to T will give as the first order condition.

$-(1-\gamma^m)\frac{\partial V}{\partial C^m} + \gamma^m \frac{\partial V}{\partial C^h} \leq 0$, with equality for T>0.

Assuming that there is no negative transfer from m to h and with V (.)=ln (.) the optimal remittance is given by: $T^* = Max\{\gamma^m I^m - (1-\gamma^m)I^h, 0\}$ [1]

This shows us that the amount of transfer increases with the migrant's income and the degree of altruism of the migrant, and it is negatively related to the household's income and the degree of altruism of the household. Another prediction of the altruism model is that an increase in the income of the migrant, coupled with a one dollar drop in the recipient's income, should raise the amount transferred exactly by one dollar i.e. $\frac{\partial T}{\partial I^m} - \frac{\partial T}{\partial I^h} = 1$ The implication of this hypothesis is that the distribution of consumption should be independent of the distribution of income.

2.1.1.2 Insurance /Risk Sharing Motive

The existence of uncertainty in third world countries like Ethiopia forced migrants and families back home to enter in to informal coinsurance arrangement. Obvious causes of uncertainty are related to the dominance of the agricultural sector which is subject to volatility in out put and price. Output volatility is caused by dependency of the agricultural sector on weather which is exogenous and stochastic. There is also information asymmetry in LDCs which leads to the absence of insurance and credit markets. Therefore, families living abroad and in towns and cities would ensure their families against drops in incomes with the exact terms of insurance depend on the bargaining power of the families and the migrant.

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[1] $\frac{\partial T^*}{\partial I^m} > 0, \frac{\partial T^*}{\partial I^h} < 0, \frac{\partial T^*}{\partial \beta^m} > 0$ *and*, $\frac{\partial T^*}{\partial \beta^h} < 0$

As Rapoport and Docquier (2006) stated this arrangement achieved because a sufficient degree of altruism prevails with in the family, that is, families detain reliable information on individual types and may be good in selecting the right migrant. If a migrant fail to remit families use retaliation strategies to enforce him/her. Default to remit may be sanctioned by denying the migrant rights to future family solidarity, inheritance, or return to the village for retirement.

To present the risk sharing model we borrow from Agrawal and Horowitz (2002).This motive to remit can be modeled as insurance/remittance scheme from migrant to households or vice versa are premium payments. For the sake of simplicity suppose the migrant lives in a two-period world with first period income Y_m and remittances of $r \geq 0$ to households. Second period income of the migrant is unknown when remittances are sent and may be high (Y_m^1) or low ($Y_m^2 = Y_m^1 - L$).The bad state (Y_m^2) occurs with probability π and the good state (Y_m^1) with probability (1- π), where 0<π<1 and L>0.L stands for loss. In the bad state an indemnity, "s", is made from households to migrants in period 2.With actuarially fair insurance, r = π s, and the risk averse migrant fully insures.

Let V_m be the migrant's period 1 utility and V^j_m the discounted period 2 utility in state j. then the migrants expected utility is

$$EU = V_m(Y_m - r) + (1-\pi)V_m^1(Y_m^1) + \pi V_m^2(Y_m^2 + s) \quad [4]$$

Then first order condition with respect to r will be:

---

[2] Note that, s = r/ π , $\frac{\partial s}{\partial r} = (1/\pi) > 0$, and $\partial^2 s / \partial r^2 = 0$

$$-V_m^{'} + \pi V_m^{2'} s^{'} = 0 \qquad [5]$$

This equation defines an implicit remittance function for the insurance motive

$$r^1 = r(\overset{+}{Y_m}, \overset{-}{Y_m^2}, \overset{+}{\pi}) \qquad [6]$$

Therefore, from the first order conditions we can see that remittances are positively related to period one income and the probability of the bad state and negatively related to second period income.

2.1.1.3 Exchange Motive

This motive to remit is sending money for families who provide service for the migrants. The range of services provided by families includes taking care of migrant's assets like land or relatives, most of the time children. Another way of exchange may be where remittance is a repayment of loans used to finance the migrant's education or cost incurred in the course of migration. The amount transferred depends on the market price of the service and the opportunity cost of the families who provide the service.

To present the exchange motive we adopt the work of Cox (1987) and Rapoport and Docquier (2006). Here we consider non altruistic agents only and fixed amount of service. Consider two agents the migrant (m) and the household (h), and fixed amount of service $\overline{S}$.

The utility function $U^i(C^i, \overline{S^i}), i = m, h$ [7]

The migrant utility function is given by: $U^m = U^m(C^m, \overline{S}, V^h(C^h, \overline{S}))$.

The first order conditions will be; $\frac{\partial U^m}{\partial \bar{S}} > 0, \frac{\partial U^h}{\partial \bar{S}} < 0$.

Suppose that the surplus is entirely appropriated by the migrant, who provide the compensation for the service of the households. It follows that the remaining residents would accept to provide the service would the compensating transfer be such that; $V^h(I^h + T, \bar{S}) \geq V^h(I^h, 0)$,Where T stands for transfer and I stands for income.

Solving the above participation equation for equality, T may be expressed as: $T = T(\bar{S}, I^h)$

Then, the comparative static results are given as follows.

$$\frac{\partial T}{\partial I^h} < or > 0, \frac{\partial T}{\partial I^m} > 0, \frac{\partial T}{\partial \bar{S}} > 0$$

This shows us the amount of remittance increases with the quantity of service provided but ambiguously reacts to the change in the household's pre transfer income. According to Rapoport and Docquier (2006) the sign of $\frac{\partial T}{\partial I^h}$ [3] depends on the effect of S on the marginal utility of consumption. Intuitively, if S has no effect on the marginal utility of income this is higher at T equals zero than Positive T, then the sign of the numerator is negative and the sign of the derivative is positive. However if there exists some complementarities between S and I, the opposite may holds so that a negative sign for the derivative is also consistent with the exchange motive.

[3] $\frac{\partial T}{\partial I^h} = -\frac{\partial V^h(I^h + T, \bar{S}) / \partial C^h - \partial V^h(I^h, 0) / \partial C^h}{\partial V^h(I^h + T, \bar{S}) / \partial C^h}$

Similar participation constraint could be derived for the migrant, the maximal amount he would accept to transfer being such that: $V^m(I^m - T^{\max}; \overline{S}) = V^m(I^m; 0)$

The main prediction of this motive unlike the altruistic motive is that an increase in the recipient's income may raise the amount transferred.

2.1.1.4 Investment and Inheritance Motive

Another self interest to remit is to invest in assets in their home area and the migrant wants to be part of the family inheritance. Migrants prefer to invest in their home area because of the existence of careful selection and purchase of assets by families and even families are trust worthy in maintaining the assets. This implies the larger is the remittance the large will be the inheritance. To present the investment motive we borrow from B. de la Baière et al. (2002).

Assume the migrant maximize utility from an investment portfolio. The migrant chooses between assets: safe assets like saving account in the host country or risky asset that is the potential bequest where the risk comes from the fact that the investment will only yield at the uncertain time of parent's death. She saves a constant rate s and one unit of safe asset yields (1+i) in the next period. Investment in the bequest will yield in the next period only if the parent dies.

The family's assets increase with the following law of motion:

$$A_{t+1}^h = S^h(A_t^h)(A_t^h + Y_t + r_t)(1 + i^{'}), \qquad [8]$$

Where A^h_t are the families assets at time t, Y_t is the parents autonomous income, r_t are remittances, i' is the rate of appreciation of families assets, and $S^h(A^h_t)$ is the families saving rate, which increases at a decreasing rate with wealth.

If the parent dies the child's inheritance is $\alpha(r_t, n_n)A^h_{t+1}$, where $\alpha(r_t, n_n)$ is the reward function, and n_n is the number of heirs. This reward function is the parent's decision on the allocation of his assets to his migrant child. In a neutral division of bequest α would be equal to the inverse of the number of heirs. However, as the parent uses this bequest to induce remittances, the reward increases with the migrant's remittances.

The role of the number of heirs is two fold. First, a larger number of heirs imply less return to investment. Second, the threat of withholding the bequest is credible if the parents has good alternative to bestow his wealth. This shows that a larger number of heirs makes this threat more credible and reinforces the link between inheritable assets and remittances.

Based on this we can infer the following:

$$\partial\alpha/\partial r_t \geq 0, \partial\alpha/\partial n_n \leq 0 \text{ and } \partial^2\alpha/(\partial n_n \partial r_t) \geq 0.$$

The migrant maximizes the expected utility she drives from her portfolio:

$$\max_{r_t} \sum \delta^t [(1-\phi_{t+1})u(A^m_{NI,t+1}) + \phi_{t+1}u(A^m_{I,t+1})], \qquad [9]$$

Where ϕ_{t+1} is the probability of inheriting at time t+1, $A_{NI,t+1} = (s(A^m_t + Y_t) - r_t)(1+i)$ is the migrant's asset position with no inheritance,

$A^m_{I,t+1} = (s(A^m_t + Y_t) - r_t)(1+i) + \alpha S^h(A^h_t + Y_t + r_t)(1+i')$ is the migrants asset position with inheritance, A^m_t is the migrants asset position at time t, and Y_t is the migrants income at time t.

Using the implicit function theorem the optimal level of remittance is derived from the first order condition[4] and given as follows in a reduced form:

$$r^*_t = f(\underset{+}{A^h_t}, \underset{+}{Y_t}, \underset{+}{\phi_{t+1}}, \underset{+}{A^m_t}, \underset{\pm}{n_n}, \underset{+}{Y_{t+1}}, \underset{-}{\xi_I}) \qquad [10]$$

Where, ξ_I is the migrant's risk aversion at the level of asset A^m_I .Note that the signs below the variables show the respective effects on the amount of transfer. From this effect of the number of heirs (n_n) is ambiguous.

Generally, if the migrant sends remittances to invest in inheritance, she will send more when the parent's income and assets are higher if she is not too risk averse. She will also transfer more if the probability of inheritance is higher, and if she is richer, wealthier, and less risk averse.

2.1.1.5 Strategic Motive

This motive is specific to the context of migration since remittances may be both the cause and the consequence of migration. This allows us to treat those two interdependent decisions in an encompassing framework. Among the various approaches stated above it is suggested that remittances may be the outcome and part of strategic interaction aiming at positive selection among migrants. Rapoport and Docquier(2006) justifies that when migrants are heterogeneous in skills and individual productivity is not perfectly observable on the labor market of the host

[4] See B.de la Baiere et al. (2002) for the derivation of first order condition.

country, employers apply statistical discrimination so that migrant workers are paid the average productivity of the minority group to which they belong. In such a context, there is a room for cooperative arrangements between skilled and unskilled migrants: the former can act cohesively and "bribe" the latter in order to maintain them home; in addition, the community of those left behind must also control potential free riders. Predictions of the model are as follows:

- Migration will be selective right from the start. That is Selectivity and remittances are positively related.
- Remittances will be targeted to those at home who have earning power since there would be no need to "bribe" those who would not credibly threaten to engage in labor migration.
- Remittances come to an end once the high-quality workers are identified.
- The formation of groups is more likely when the differential in wage is large.

2.1.2 Macro Economic Determinants of Remittances

Even if the focus of this paper is on the micro economics aspect of remittances the macroeconomics determinants of remittances are revised to highlight the general framework for readers. According to World Economic outlook (2005) and Global Economic Prospectus (2006), factors affecting the inflow and size of remittances at the macro level include:

- Economic activity in the migrants home country i.e. negative shocks to output, employment and wages in the home country reduce income of migrant families which leads to more inflow remittances to smooth consumption.
- Economic policies and institutions in the home country. Existence of exchange rate restrictions and black market premia may reduce the amount of remittances

send back home. On the other hand policies including tax exemptions for remittance income; improved access to banking services by recipients; incentives to attract investments by the Diasporas; access to foreign exchange or lower duties on imports; support for the projects of migrant associations; and help for migrants in accessing financial systems increase the inflow of remittances.

- General risks in migrants' home country like political instability may discourage migrants from sending remittances.
- Investment opportunities in the host country. If there is a better return on investment in the host country it will reduce the inflow of remittances to migrants' home country.
- Economic activity in the host country. Improved economic condition in the host country increases the chance to be employed and to earn wage which in turn increases the inflow of remittances to migrants' home country.

2.2 Empirical Review of Literature

2.2.1 Remittances and Poverty

There is a proposition that remittances from migrants to households reduce poverty. This proposition is examined by different authors using data from different countries. One of the studies is by Gupta et al. (2007) using data from 233 poverty surveys in 76 developing countries, including 24 in SSA. The finding of this study confirm that a 10 percent rise in the remittances-to-GDP ratio is associated with a fall of a little more than 1 percent in the percentage of people living on less than $1 a day. Further, they find that even taking into account the impact of poverty on remittances, in a model in which both poverty and remittances are simultaneously and endogenously determined, the poverty-reducing effect of remittances remains.

A study by Fajnzylber and López (2007) from 11 Latin American countries find that the average estimated impact of remittances on poverty headcounts is such that a 1 percentage point increase in the remittances to GDP ratio reduces moderate and extreme poverty by respectively 0.37 percent and 0.29 percent. On the other hand, Adams and Page (2005) use results from household surveys in 71 developing countries to analyze the impact of international migration and remittances on poverty in the developing world. The result shows that remittances reduce the level, depth, and severity of poverty in LDCs. Similarly, a paper by Adams (2004) using data from a survey of 7276 households in urban and rural Guatemala finds that the receipt of international remittances reduces the poverty headcount index by 1.6 percent and the more sensitive poverty gap index by 12.6 percent. Generally, the studies revised here confirm the poverty reducing effect of remittances even if the magnitude varies among countries.

2.2.2 Remittance and Inequality

Remittances may increase or decrease income inequality based on the situation of a given country or region. Contradicting empirical findings are there on the impact of remittances on inequality. A paper by Barham and Boucher (1998) in Bluefield's, Nicaragua using data collected in 1991 assesses how migration and remittances impact the distribution of income. The results confirm that when the observed income distribution is compared with two no-migration counterfactuals, where migration and remittances are treated as a substitute for home earnings, income inequality was found to be lower in the no-migration counterfactuals. In other words, the potential home earnings of migrants in Bluefield's have a more equalizing effect than do remittances on income distribution.

However, Jones (1998) in his study in Mexico argued that two factors help to explain the divergence of views on labor migration and inequality: a place's stage of migration and the geographic scale (interregional, interurban, rural-urban, and interfamilial) at which inequalities are measured. With regard to stage of migration, evidence from central Zacatecas, Mexico, supports the proposition that interfamilial inequalities decrease with migration experience up to a point, after which they increase. With regard to geographic scale, he found that at family scale, better-off families improve their status at the expense of poorer families, with advanced stages of U.S. migration. At the rural-urban scale, by contrast, advanced stages of migration result in rural places improving their income position vis-à-vis in urban places.

In contrary to the above findings, another study in Egypt by Adams (1989) shows that the remittance earnings of migrants from abroad had a negative impact on rural income distribution.

The data indicate that remittances from abroad worsened rural household income distribution-both in gross terms and in per capita terms because they were earned mainly by upper income villagers.

However, a study by Acosta et al. (2007) using household surveys data for 10 Latin American and Caribbean countries stated cross-country regressions suggest that while in Latin America remittances generally have the effect of reducing inequality, the corresponding changes are generally small in magnitude. A study by Rapoport and Mckenzie (2007) using data from Mexico found that international migration is a cost at the beginning of migration because only individuals on the middle class of wealth distribution may have the opportunity to migrate which increases inequality in the sending country. But after the migration networks are formed the cost for future migration will reduce so that inequality will be lower. They find that the overall impact of migration is to reduce inequality across communities with relatively high levels of past migration.

2.2.3 Remittance and Labor Supply

People argue that remittance income has a negative impact on labor market participation of recipients and also are the cause for high reservation wage. Kim (2007) in his study in Jamaica examines the effect of remittance income on the labor supply of households and some evidence was found to confirm that remittances contribute to high real wages while high unemployment persists. The cross-sectional analysis suggests that remittances have some impact on labor participation but little or none on the weekly working hours of employees. The pseudo-panel data analysis confirms the result that remittances have a strong impact on labor participation but

not on weekly working hours. Households with a remittance income have a higher reservation wage and reduce labor supply by moving out of the labor force. Another study by Bussolo and Medvedev (2007) also confirm the negative relationship between labor supply and remittances in Jamaica

A study by Airola (2005) using household income and expenditure data from Mexico attempts to understand to what degree labor patterns are affected by the receipt of remittances and analyze the effect of remittance income on labor supply decisions. The finding shows that household labor supply in response to remittance income is consistent with findings which measure labor supply behavior in the presence of other forms of unearned income in different settings. That is, remittance receipts are associated with fewer hours of work.

2.2.4 Remittance and Schooling

Migrants transfer affects the schooling decisions of households back home. It is expected that as the amount of remittance increases school attendance of children in the origin families will improve. Cox and Ureta (2003) examine this hypothesis using data from El Salvador. They adopted the Cox proportional hazard model to examine the determinants of school attendance. Measuring income from a source that is uncorrelated with parental schooling remittances they found that remittances have a large and significant effect on school retention. They also estimate that while household income net of remittances has a small, though significant, impact on the hazard of leaving school in rural and urban areas, remittances have a much larger impact on the hazard of leaving school. In urban areas, the effect of remittances is, at its smallest, 10 times the

size of the effect of other income. In rural areas, the effect of remittance is about 2.6 times that of other income.

2.2.5 Empirical Evidence on Motivation to Remit

Different theories of the motivation to remit are stated in the conceptual frame work part of this paper. These theories are tested by different authors and some of them are revised below.

B. de la Brière et al. (1997) in their study in The Dominican Sierra examined two types of motivation for migrant children to send remittances to their parents: insurance in response to shocks to parents' income and investment toward increasing future inheritance. Taking into account the heterogeneous nature of migrants by gender, age, intention to return and composition effects among migrant sons and daughters of the household the results show that insurance is the main motivation to remit for women migrants. Where as investment toward inheritance is the main motivation to remit for men, young migrants, and migrants intending to return.

Stark and Lucas (1985) in their study in Botswana tested the altruism and self interest motivation to remit. But their finding does not lend support to one of the main components of the altruism model. Another study by Cox (1987) tests two motives: altruism and exchange. Evidence presented in the study casts doubt on the altruistic model of transfer behavior. But the evidence is more consistent with exchange-related motives.

Vanwey (2004) study in Thailand explores altruistic and contractual patterns of remittances using a gendered approach. The finding of this article confirms that, male and female migrants

behave both altruistically and contractually. However, women and migrants from poorer households behave more altruistically, while men and migrants from richer households behave more contractually. Another study by Agarwal and Horowitz (2002) using Guyanese data found that there is differential remittance behavior by migrants from households with multiple versus single migrants under altruism and risk sharing. Their estimation finds the existence of significant differences in remittance behavior of multiple and single migrants and these differences support the altruistic incentive to remit. A study using household survey in Peru by Cox et al. (1996) found that transfer amounts received increase with recipient pre-transfer income, which contradicts a key prediction of the altruism hypothesis but is consistent with exchange hypothesis.

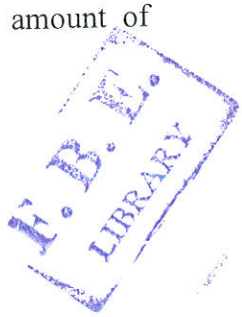
Mineshima and Browne (2007) in their paper 'remittance in the pacific islands' found that the altruistic motive for remittances remains much stronger in the Pacific region than in the rest of Asia, where investment considerations increasingly appear to predominate, especially for the large share of single citizens working abroad for limited periods. Contrary to this, Brown (1997) tested the altruism motive to remit from survey data on Tongan and Western Samoan migrants in Sydney and found that the altruism motive has no empirical validity and migrants are motivated by factors other than altruistic family support, including asset accumulation and investment back home.

Chapter Three
Methodology of the Study

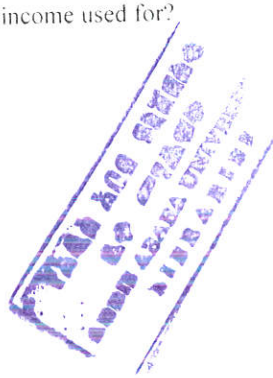
3.1 Data Source

The data for this study was obtained from the socioeconomic survey of urban household's collected by the Department of Economics, Addis Ababa University in collaboration with Institute of Development Research (1994),the then Ethiopian Ministry of Economic Development and Cooperation and Michigan State University (1995) and University of Gothenburg in all the rounds. The data was collected for five waves i.e. 1994, 1995, 1997, 2000, and 2004. The urban centers covered by the survey include Addis Ababa, Awassa, Bahir Dar, Dessie, Dire Dawa, Jimma, and Mekele. The sample size was 1500 households in each round. The sample size for Addis Ababa, Awassa and Dire Dawa were 900,125 and 75, respectively. However, Bahir Dar, Dessie, Jimma, and Mekelle contributed 100 households (Kedir, 2005)

The data includes information on local and international remittances, educational status of households, migration, household demographics, expenditure, employment and income, vulnerability, credit and savings. In addition, information on the frequency, and amount of remittances was considered.[5]



[5] The questions included in the survey related to remittances are: how many times did you receive remittances in the last 12 months? Type of receipt: This includes remittances from abroad, remittances from domestic, pension, gift, inheritance, dowry, and others. Who sent you the remittances or gave you the gift? How long has the remitter being there? Remitter's martial status (included only in the 2004 survey). Amount received in the last 12 months. What was this income used for?



The data used in this study is panel data. Panel data is superior to cross sectional and time series data in the sense that it helps us to control individual heterogeneity, give more informative data, more variability and more efficiency. It also allows identification of certain parameters or questions without the need to make restrictive assumptions. There are for instance a larger number of data points available, increasing the degrees of freedom and reducing the colinearity among explanatory variables. Moreover, it allows constructing and testing more complicated behavioral models than purely cross-sectional or time series data. One can also better study the dynamics of adjustment. A particular advantage of the micro-panel data sets is that they eliminate biases resulting from aggregation over micro-units. Thus, Panel data are not only suitable to model or explain why an individual unit behave differently but also model why a given unit behaves differently at different periods (Hsiao, 1986).

3.2 Analytical Framework

To measure a household's welfare, the standard utility theory was applied by assuming that the household wants to maximize his/her utility given a budget constraint. Utility is representing household's welfare but it is not observable. Thus, a proxy for indicator of household welfare should be used. A good indicator of household welfare that can be used as a proxy for household welfare is household consumption expenditure. According to Deaton and Zaidi (1999), and Glewwee (1991) ,based on duality theory, it is possible to express consumer decisions in terms of expenditure functions, which specify the amount of money needed by a utility maximizing household to reach a given level of utility. Then the determinants of expenditure (x^h) includes prices of consumer goods and services ($p_1,....,p_n$), characteristics of household members, such as their age and sex ($b_1,...,b_m$) and the utility level (U) that the household wishes to obtain.

This can be stated as follows:

$$x^h = E(U; p_1, ..., p_2; b_1^h, ..., b_2^h), \qquad [11]$$

Where x^h stands for households expenditure and h denotes a particular household. Prices don't contain the superscript h because it is assumed that all households face the same prices. This assumption will be relaxed later. To use expenditure levels (x^h) to measure unobservable utility (U) impose a restriction on the functional form of E (.) so that household characteristics can be put into a distinct functional form which becomes a multiplicative term to the rest of the expenditure function.

$$x^h = E(U; p_1, ..., p_2 : b_1^h, ..., b_2^h),$$

$$= m(b_1^h, ..., b_m^h; p_1, ..., p_2) E_1(U; p_1, ..., p_2) \qquad [12]$$

This states that there exists a per capita expenditure function (E_1) which can be scaled up or down by a distinct multiplicative factor (m) to accommodate a difference in household's composition.

To compare the utility level across households with different compositions we can divide both sides of equation (2) by m (.):

$$x^h / m(b_1^h, ..., b_m^h; p_1, ..., p_n) = E_1(U; p_1, ..., p_n) \qquad [13]$$

The left hand side of equation (13) is money metric measure of utility for a give set of prices.

However, households do not always face the same prices. Therefore, the model can be extended to incorporate and compare the difference in price in different regions. This can be

done by defining the true cost of living index [6]as ratio of two expenditure functions. Utility levels of households living in different regions with different price[7] structures can be compared as follows (Glewwe, 1991):

$$\frac{x_B^h / [m(.)s_B]}{p_r(U^B, \cdots,)} = \frac{E_1(U^B; p_1^B, ..., P_n^B)}{p_r(U^B, \cdots,)} \qquad [14]$$

$$= E_1(U^B; P_1^A, ..., P_n^A) \leq or \geq E_1(U^A; P_1^A, ..., P_n^A)$$

$$= \frac{x_A^s / s_A}{m(.)} \quad as \quad U^B \geq or \leq U^A$$

S_j is the scaling factor.[8] Where j=A, B. $s_j = \exp\left[\sum_{i=1}^{n} w_i \log\left(p_i^j / \overline{p}_i\right)\right]$

To examine the determinants of household welfare we can regress $x^h / [m(.)s_j]$ on various explanatory variables assumed to be exogenous. This is the reduced form estimate of various structural relationships which affect welfare. The explanatory variables can be categorized as follows:

a) Household composition variables (b^h); b) location dummy variables ($R^{h)}$; c) physical assets owned by the household (K^h); d) human capital variables such as education and

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[6] True cost-of -living index= $\frac{E_1(U; p_1^B, ..., p_n^B)}{E_1(U; p_1^A, ..., p_n^A)} = p(U; p_1^B, ..., p_n^B; p_1^A, ..., p_n^A)$ where A and B stands for regions.

[7] $\overline{p}_j = \exp\left[\sum_{i=1}^{n} w_i \log\left(p_i^j / \overline{p}_i\right)\right] \overline{p} = s_j \overline{p}$, w_i is expenditure share of good i.

[8] See Glewwee (1991) for detail derivation of scaling factor.

experience of the household (E^h); and e) community characteristics (C^h)[9].We can generalize equation [14] for several regions. Our function to be estimated is:

$$\frac{x^h}{m(b_1^h,...,b_m^h;p_1^j,...,p_n^j)s_j} = F(b_1^h,...,b_m^h;R_1^h,...,R_r^h;K_1^h,...,K_k^h;E_1^h,...,E_e^h;C_1^h,...,C_c^h).\varepsilon \quad [15]$$

Where ε is a multiplicative term accounting for random (unobserved) effects.

If we multiply both sides of equation [15] by m (.)[10], and take the logarithm of both sides and assumes a linear form of the logarithms of F (.) and m (.) we obtain:

$$\log\left(x^h/s_j\right) = \sum_{j=1}^{r}\sum_{i=1}^{m}\alpha_i b_i^h + \sum_{i=1}^{m}\beta_{bi}b_i^h + \sum_{i=1}^{r}\beta_{ri}R_i^h + \sum_{i=1}^{k}\beta_{ki}K_i^h + \sum_{i=1}^{e}\beta_{ei}E_i^h + \sum_{i=1}^{c}\beta_{ci}C_i^h + e \quad [16]$$

The α's are the parameters of m (.), the β's are parameters of F (.) and e=log (ε).By estimating (16) we can identify ($\alpha_{ij}+\beta_{bi}$) within any region j, not α_{ij} or β_{bi} separately. That means we can measure the impact of household composition on the observed level of household expenditures, but not relate this to unobservable household utility.

[9] We will not include community characteristics in our regression because the survey doesn't cover community level characteristics.

[10] Using an incorrect estimate of m (.) will be problematic. So we can never estimate m (.) without making certain assumptions. Incorrect estimates of m (.) will affect the parameter estimates on $b_1^h,...,b_m^h$ in the function F(.), so the consequence of not knowing the function m(.) is that one cannot determine whether particular types of households are likely to have higher or lower levels of household welfare. Given this we might not estimate the function m (.) at all but instead allow a broader estimation to work this out.

3.3 Econometric Model

The econometric methodology applied for the study is presented in this section. Based on Adams (2004, 2006), and Cameron and Trivedi (2005), Barham and Boucher (1998), Acosta et al. (2007) three equations are used to address the objective of the research. The first equation is the selectivity equation where we are going to check whether there is a selectivity bias with regards to migration and recipient of remittance. The second equation is designed to predict the expenditure of households in the case of no remittance and then to use the parameters to predict household expenditure in the case of remittances. This helps to see the contribution of migrants to expenditure/income of families if they stay and work at home. Finally we will have the third model which helps us to explain the impact of remittances on household welfare. In the first model the 2004 urban household survey was used because it is not methodologically possible to estimate the selection equation in the panel framework. Whereas the third model is estimated using the panel data.

3.3.1 Econometric Model of Household's Expenditure with Selection Control

The main problem with comparing household's expenditure excluding remittance is that we cannot know the income of the households had those migrants stayed in home land. According to Acosta et al. (2007), these comparisons suffer from one important shortcoming, namely that remittance are not likely to be an exogenous transfer but rather a substitute for the home earnings that migrants would have had if they had not decided to leave their countries to work abroad. In fact, the non-remittances income reported by households with migrants cannot be considered a good representation of the situation of the family prior to migration. If the migrant had positive earnings before leaving the household, it is likely that the household's total non-remittances

income is lower after migration. Thus, estimating the effect of migration and remittances on poverty/welfare would require taking into consideration the counterfactual per capita expenditure that the household would have had if the migrant had stayed at home, otherwise we would be overstating the true impact of migration and remittances on welfare of households.

It is possible to overcome this problem by predicting income in the case of no migration and remittances. This can be done by treating households with no remittances as a random draw from the population and estimating the mean regression of incomes for these no remittance households. After estimating this we use the parameters to predict the expenditure of households with remittances (Adams, 2006).

This approach may be problematic if households with and without remittances differ systematically in their unobserved characteristics. There is a proposition that households differ systematically in their skill and ability which is not observed. This leads to selection biases in generating migrant and remittances. Therefore, the main purpose of the selection equation is to investigate whether migration is systematic or not.

The first equation is the selection equation. In this case we will have the choice equation and the expenditure function which may be determined by migration and remittances.

$$R_r^* = \gamma_r + \beta_r Z_r + \varepsilon_r \qquad [17]$$

The dependent variable [R_r^*] is remittance, where R is not observable if $R^* \leq 0$ (if the individual get no remittances), $R=R^*$, if $R^*>0$ the individual get remittances.

Where Z_r is a vector of explanatory variables in group r , β_r is coefficient of group r, whereas ε_r is assumed independent of all the component of Z_r for all i, i=1,…,R, and that $\varepsilon_r \sim N(0,1)$

Equation [17] is estimated for all observations and stand for the household choice decision to send migrant and receive transfer. The household chooses a certain group if and only if the household gain higher income from that activity than any other activities i.e. $R_{ri}^{*} > Max(R_{ji}^{*}); j \neq r$.

Expenditure function:

$$y_r = \gamma_i + \alpha_r x_r + \theta\lambda_i + \mu_r \qquad [18]$$

Where y_r is logarithm of per capita expenditure , x_r is a vector of explanatory variables in group r , α_r is a coefficient of group r, whereas μ_r is assumed independent of all the component of x_r ,for all i, i=1,…,R, and that μ_r ~N(0,1).

Here we will include lambda from equation [17] and the equation is estimated by OLS.

The term λ (lambda) is the inverse Mill's ratio defined as

$$\lambda_i = \frac{\phi(\alpha_r + \beta z_r)}{1 - \Phi(\alpha_r + \beta z_r)} \qquad [19]$$

The objective of expenditure equation [18] is to see whether expenditure is determined by remittances (Or the determination of household expenditure conditional up on the receipt of remittances). Unlike the choice equation the dependent variable (expenditure) is continuous and observable. The procedure of estimating these two equations (choice equation and the expenditure equation) is the Hekman procedure.

The model is identifiable if there is at least one independent variable which is in equation [17] but it is not in equation [18]. This is an exclusion restriction. This means variables that affect remittances but that do not affect household expenditure. Age of the household head is the variable that identifies the model. It is proposed that age of household head will positively affect household migration and remittance because households in the older age category will have children in the age 15-30 that enable them to produce migrant. But age of the head negatively related to household income (Adams, 2006). In the context of Ethiopia, older household heads are expected to earn lesser income because their educational level is low which has an implication on income generating potential.

The following explanatory variables are used. The rationale of choosing the explanatory variables (in both the choice equation and expenditure equation) is:

Household characteristics which include age of household (agehhd), family size (hhsize), number of children under five (age5) and number of household members above 15(age15) will affect the probability of migration and remittances. The probability of migration and remittance is expected to be higher for households with older age, more household members above 15 and fewer children under 5. The sign of age of household and number of household members above 15 is expected to be positive whereas the sign of number of children under 5 is expected to be negative.

Human capital variables will affect the probability of migration and remittances. As the educational level of individual's increases, the opportunity of securing employment and

earning better income in destination areas is also increases. Therefore the sign of these human capital variables is expected to be positive.

Migration network will affect the probability of migration and remittance. Some societies and nationalities have traditional village networks which increase the probability of migration. This shows that the sign of this variable is expected to be positive. The proxy for migration network is ethnic dummy.

Location dummy: the location of residents will affect the probability of migration and remittance. Those who live in big cities like Addis Ababa will have better opportunity and information about destination areas than other urban centers.

3.3.2 Econometric Model of Estimating Predicted Household's Expenditure

$$Y = \beta X + \varepsilon \qquad [20]$$

Where Y stands for per capita household expenditure, X is a vector of explanatory variables, β represents vector of coefficients and ε is random error term.

This equation [20] is meant to predict per capita expenditure in the case of no migration/remittances. Based on the methodology adopted by Acosta et al. (2007),Barham and Boucher (1998) and Adams (2004, 2006) in studies in Ghana and Guatemala in a cross sectional data the counterfactual income is predicted. In this case, we can see the expenditure of households if migrants stayed and work at home. We can predict expenditure in the case no remittances, internal remittances and international remittance. This can be done following three steps. First, we will estimate the parameters predicting household's expenditure using

households which don't receive remittances. Then, the parameters estimated will be used on the households which receive internal remittances. The same parameters estimated above will also be used to predict income of households which receive international remittances.

We can see here the change in expenditure due to the inflow of remittance after considering the counterfactual income. After predicting the expenditure in the case of no migration and remittances we can get the expenditure in the case of remittance. To calculate the expenditure in the case of remittances we will add the actual remittances on the predicted income in the case of no remittances, internal remittances and international remittances (Adams, 1991).

Table 1: Description of Variables Used in the Selection Equation and Predicting Per Capita Expenditure Function

Variables	Description
lnpccons	Logarithm of annual per capita consumption excluding remittances
agehhd	Age of household head in years
remit	Remittances
age5	number of children under age 5
age15	number of children above age15
hhsize04	Household size
location	location dummy equals to 1 for Addis Ababa and zero otherwise
illiterate	Number household members who can not read and write
literate	Number of household members who can read and write
primary	number of household members with primary education
secondary	number of household members with secondary education
techvoc	number of household members with technical and vocational education
university	number of household members with university education
amhara	Dummy equal to 1for Amhara, 0 otherwise
gurage	Dummy equal to one for Gurage, 0 otherwise
oromo	Dummy equal to one for Oromo, 0 otherwise
tigrayan	Dummy equal to one for Tigrayan, 0 otherwise
others	Dummy equal to one for other ethnic groups, 0 otherwise
femaledummy	One if the head of household is female ,0 otherwise

The justification to use these variables as explanatory variables in equation [20] is explained as follows. The impact of educational variables on expenditure is expected to be positive. But the age of household head, number of children under age 5 and household size are expected to be negatively related to expenditure. Whereas number of children above15 is expected to have positive impact on expenditure. Location also affects the level of household's expenditure (Adams, 2006).

3.3.3 Measuring the Impact of Remittances on Household Welfare-Panel Data Model

The purpose of this equation is to see the impact of remittance on household welfare/poverty status. Household's expenditure is used as a proxy for household welfare. This model is based on Quartey (2006), and Glewwe (1991).

The formal derivation of the equation is as follows:

$$y_{it} = \alpha_i + \beta x_{it}^{'} + \varepsilon_{it} \quad , \varepsilon_{it} \sim IID(0, \delta^2) \qquad [21]$$

$$\text{cov}(x_{it}, \varepsilon_{it}) = 0$$

Where Y_{it} is the logarithmic of household i per capita consumption expenditure at time t, X_{it} represents a vector of explanatory variables including remittances, ε_{it} is an identically and independently distributed idiosyncratic random term, and α_i is the individual effect that doesn't vary over time (Wooldrige,2002).

To remove the impact of individual effects we transform the model. To do that averaging equation (22) over time for each i, will give as

$$\overline{y}_i = \beta \overline{x}_i + \alpha_i + \overline{\varepsilon}_i \qquad [22]$$

Subtracting [23] from [22] gives

$$(y_{it} - \bar{y}_i) = \beta(x_{it}' - \bar{x}_i') + (\alpha_{it} - \bar{\alpha}_i), t = 1,2,...,T \qquad [23]$$

This is the fixed effect model. In this case we are interested more on individual difference. Another class of model is the random effect model where we treat $\alpha_i + \varepsilon_{it}$ as an error term consisting of an individual specific component (α_i) and a remainder component (ε_{it}).

Then, our model will be

$$y_{it} = \beta x_{it}' + \upsilon_{it}, \upsilon_{it} = \alpha_i + \varepsilon_{it} \qquad [24]$$

Assuming, $\text{cov}(x_{it}, \alpha_i) = 0$. The random effect estimator combine the information from the between and within dimensions in an efficient way. We can get the within estimator if we regress [23] and the between estimator from [22]

Based on this specification the choice between the random effect and fixed effect model is based on different factors. If we are interested on individual effect we prefer fixed effect model, which makes sense if the number of units is relatively small and of specific nature. But this is not always the case. Even if we have large population of individual units fixed effect may be preferred if the explanatory variables are correlated with the individual effect ($\text{cov}(x_{it}, \alpha_i) \neq 0$) (Wooldridge, 2002).

Hausman specification test is conducted to check whether fixed or random effect is appropriate. The null hypothesis is α_i and x_{it} are uncorrelated. Since the key consideration in choosing between a random effects and fixed effects approach is whether α_i and x_{it} are correlated, it is important to have a method for testing this assumption. Hausman (1978) proposed a test based

on the difference between the random effects $(\hat{\beta}_{RE})$ and fixed effects $\left(\hat{\beta}_{FE}\right)$ estimates. Since Fixed Effect model is consistent when α_i and x_{it} are correlated, but Random Effect model is inconsistent, a statistically significant difference is interpreted as evidence against the random effects assumption. The Hausman test statistics is:

$$\xi_H = (\hat{\beta}_{FE} - \hat{\beta}_{RE})'[\hat{v}\{\hat{\beta}_{FE}\} - \hat{v}\{\hat{\beta}_{RE}\}]^{-1}(\hat{\beta}_{FE} - \hat{\beta}_{RE}) \qquad [25]$$

(Verbeek, 2002)

Table 2: Definition and Description of Variables-Used In the Panel Data Model

Variables	Description
lnrpccons	Logarithm of real per capita annual consumption expenditure
age	Age of household head
maledum	Dummy for sex and equals one if the head of household is male, 0 otherwise.
hhsize	Household size
illiterate	Dummy=1,if the head of household has no education,0 otherwise
literate	Dummy=1,if the head of household is literate,0 otherwise
primary	Dummy=1,if the head of household had primary education ,0 otherwise
secondary	Dummy=1,if the head of household had secondary education,0 otherwise
techvoc	Dummy=1,if the head of household had technical and vocational training,0 otherwise
university	Dummy=1,if the head of household had university education ,0 otherwise
Remit_1	One year lag real remittances
addis	Dummy=,1 if the city is Addis Ababa, 0 otherwise
awassa	dummy=1, if the city is Awassa, 0 otherwise
bahirdar	Dummy=1, if the city is bahirdar, 0 otherwise
dessie	Dummy=1, if the city is dessie, 0 otherwise
diredawa	Dummy=1, if the city is diredawa ,0 otherwise
jimma	Dummy=1, if the city is jimma, 0 otherwise
mekele	Dummy=1, if the city is mekele, 0 otherwise

Reasons to choose the explanatory variables are explained as follows:

Expenditure is used as an indicator of household welfare and poverty status. The reason to use expenditure instead of income is that expenditure provides more accurate measure of welfare over time. Another reason is that households in LDCs like Ethiopia under report their income so that income suffers from measurement error (Adams, 2006). Consumption is less variable over the period of a year, much more stable than income in agricultural economies and makes it more reasonable to extrapolate from two weeks to a year for a survey household (Deaton and Zaidi, 1999).

There are other reasons why it is more practical to gather consumption than income data in most developing countries. Where self-employment, including small business and agriculture, is common, it is difficult to gather accurate income data, or indeed to separate business transactions from consumption transactions (ibid).Expenditure in this study includes expenditure for food, and expenditure for non food items. The non food expenditure includes expenditure for transport, education, health, clothes, electric and water bills, and furniture's and equipments, etc.

Household characteristics are expected to affect the welfare/poverty status of the family because the composition of households has an implication on the income of the family. The life cycle hypothesis proposes that members of the family which are in the labor force will have a positive contribution to family income. Elderly and young family members are net consumers of the family income. Therefore family composition variables like age and sex of head of household and family size will have an impact on welfare.

Human capital variables are expected to have positive impact on the welfare of households. The number of years of education of the family member affects the income generating potential of the family. Households with more educated family members are expected to be better off.

Remittances: are expected to improve the welfare of the family by smoothing the household's consumption. This depends on the way families use the transfers. Poor families may use to smooth consumption and to satisfy their basic needs whereas rich families may invest in productive activities or non productive activities. In this study we expect migrants remittances will improve the welfare of household's i.e. the sign of this variable will be positive (Quarety, 2006).

Location variables: location also explains welfare. Area of residence varies in different aspects like availability of infrastructure and other geographical differences which has its own implication on household welfare.

Chapter Four

Results and Discussion

4.1 Descriptive Analysis

4.1.1 Demographic Characteristics of Sample Households

As explained in the methodology section, households are the unit of analysis in the study. Therefore, the demographic characteristic of sample household heads is analyzed. On average out of the total households in the survey, 60% of the households are male headed while 40% are female headed. The age of the heads of household was 48 years in 1994 and the average household size was 7 for the panel period (Table 3).

Table 3: Demographic Characteristics of Households

Variables		1994	1995	1997	2000	2004	Average
Household heads average age in years		48	49	51	49	50	49
Sex of household head	Male	933	933	836	826	803	886
	Female	554	554	522	647	648	592
Average household size		7	6	6	7	7	7

Source: Author's calculation from EUSES

With regards to educational status of household heads almost one third (31%) of the household heads has primary education, 28% of them been Illiterate, and 18% had secondary education through out the period (Table 4).

Table 4: Educational status of household heads (1994-2004)

	1994	1995	1997	2000	2004	Average
Educational status	Percent of total	Percent of total	Percent of total	Percent of total	Percent of Total	
illiterate	24	24	24	34	33	28
literate	14	14	14	10	8	12
primary	33	33	33	27	27	31
secondary	18	18	18	17	20	18
technical/ vocational	2	2	2	2	2	2
university	9	9	9	10	10	9
total	100	100	100	100	100	100

Source: Author's calculation from EUSES

4.1.2 Inflow of Remittances over the Study Period

Out of the total households covered in this survey and used for the regression analysis the number of households who received remittance from abroad and/or from domestic sources were 918 in 1994, 894 in 1995, 1263 in 1997, 1020 in 2000, and 1023 in 2004. According to the data from the survey the total amount of remittances received by households in real terms were 8703.5 Birr in 1994, 8666 Birr in 1995, 13450 Birr in 1997, 13733 Birr in 2000, and 26038.5 Birr in 2004.

The mean value of transfer in cash exhibited an increasing trend. Transfer in kind did not have predictable pattern. It had declined in 1995 and increased in 1997 and 2000, again significantly declines in 2004 (Annex 1). Meanwhile the maximum amount of transfer in real terms reaches its highest level in the first round and the lowest being recorded in the fourth round. The highest level of mean value in real terms was Birr 36 in 2004 and the lowest being Birr 15 in 1995 (Table 5).

Table 5: Descriptive Statistics of Net Remittances (internal and international) in Nominal and Real Terms in Birr (1994-2004)

	1994		1995		1997		2000		2004	
	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real
Max	79000	785	67060	661	58000	695	40000	387	92500	759
min	1	0	5	0	1.8	0	1	0	2	0
median	500	8	347	8	360	8	600	10	1752	20
mean	1192	18	986	15	1148	20	1517	21	3104	36

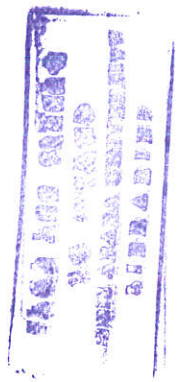
Source: Author's calculation from EUSES

According to the data the main source of remittances include remittance from abroad, domestic transfer, pension, and gift (Table 6). Nevertheless, there was no significant change in the number of individuals who received remittances from abroad for the period 1994, 1995, and 1997. It had slightly increased from that of 20% in 2000 to 22% in 2004. On the other hand, the proportion of households who received remittance from domestic relatives and friends was 22% in1994, 26% in 1995, 19% in 1997, 16% in 2000, and 22% in 2004. Furthermore, among those who received remittances gift constituted 11% in 1994, 22% in 1995, 31% in 1997, and 16% in 2000, 13% in 2004. The proportion of households who received remittances in the form of dowry, inheritance, house rent, and food aid combined were about 19% for 1994 and the lowest being in 1995 which was 2%. Overall, the main sources of transfer for the majority of households were remittances from abroad and from domestic during the panel period.

Table 6: Percent of Sample Households Receiving Remittances from Different Sources

Type of Receipt	1994	1995	1997	2000	2004
Remittance From Abroad	17	18	17	20	22
Remittance From Domestic	22	26	19	16	22
Pension	31	32	21	30	27
Gift	11	22	31	16	13
Others	19	2	13	18	16
Total	100	100	100	100	100

Source: Author's calculation from EUSES



Interestingly, the total amount of real remittance received by households in the panel from abroad exhibited an increasing trend (Table 7). The highest percentage of receipt, 38% of receipt from abroad recorded in 2000.This might be related to the Ethio-Eritrean war where remittances are used to smooth consumption in times of shocks. Remittance from domestic sources, on the

other hand fluctuates through out the study period. Government transfer in the form of pension was also contributes 32% of the total receipt on average for the whole period (Annex 6)

Table 7: Amount of Real Remittances Received and Percent of Total Receipts.

Type of Receipt	1994		1995		1997		2000		2004	
	Amount received	Percent of Total	Amount Received	Percent of Total	Amount Received	Percent of Total	Amount Received	Percent of Total	Amount Received	Percent of Total
Remittance from Abroad	2387	27%	2983	34%	4224	31%	5247	38%	7540	29%
Remittance from Domestic	1762	20%	1433	17%	1318	10%	1938	14%	3160	12%
Pension	3224	37%	3207	37%	3102	23%	3638	26%	10129	39%
Gift	534	6%	623	7%	1395	10%	887	6%	1187	5%
Inheritance	9	0%	231	3%	-	-	125	1%	369	1%
Dowry	127	1%	-	-	-	-	2	0%	83	0%
House Rent	353	4%	-	-	2561	19%	1790	13%	3427	13%
Food Aid	286	3%	-	-	34	0%	63	0%	95	0%
Other	21	0%	188	2%	815	6%	43	0%	49	0%
Total	8703.5	100%	8666	100%	13450	100%	13733	100%	26038.5	100%

Source: Author's calculation from EUSES

With regard to remittance senders' non-resident and relative household members account for the major source of remittance followed by government transfers. The remittance from relatives was 28% in 1994 and it increased to 41% of the total remitters in the 1995 but decreased to27 % in 2004 (Table 8). Government transfer exhibits a decreasing trend where the highest proportion recorded in 1994 and the lowest being in 1997. On the other hand, transfers from friends constituted less than 10% of the total sources of remittances through out the period.

Table 8: Remittances by Sources in Percent

Remitters	1994	1995	1997	2000	2004
Non-Resident Household Member	17	13	12	18	32
Relative of Household Member	28	41	36	31	27
Friends	6	6	6	5	3
Government Organization	42	34	23	32	28
Non-Governmental Agency	4	3	10	6	5
Others	3	3	13	8	5
Total	100	100	100	100	100

Source: Author's calculation from EUSES

On the other hand, household's use remittances for different purpose. If the senders transfer the money based on their willingness to support their family -the altruism motive- household's use the money to smooth their consumption or for any other household expenditure and investment purpose. While, if there is an arrangement between the remitter and the households it is usually used for investment in assets or on businesses.

Households included in the survey were asked to state the primary, secondary and third use of remittances. Consistent with the theoretical background stated in chapter two data from the survey confirm that 88% in 1994, 83.7% in 1995, 83% in 1997, 84% in 2000 and 92 % in 2004 of the total households primarily used the remittances for consumption expenditure. This is in line with the altruism motive where relatives and friends send remittance to smooth consumption of their families. The proportion of remittance used for investment in assets and in private businesses is less than 5% in all the observation periods. This implies remittance is an important source of income used to smooth consumption (Table 9). In fact, Gupta et al. (2007) states that remittances reduce poverty, smooth consumption, affect labor supply, provide working capital, and have multiplier effects through increased household spending.

Table 9: Main Use of Remittances by Households (Percentage of Total Recipients)

Used for	1994	1995	1997	2000	2004
Consumption	88	84	83.4	84	92
Investment in Land/House	3	1	1.5	1	1
others	9	15	15.5	15	7

Source: Author's calculation from EUSES

Paying for children schooling was reported to be a second important purpose of remittances. For instance, the proportion of households which used the remittance for schooling was 14% in 1994, 12% in 1995, 10% in 1997, 16% in 2000, and 46% in 2004. Educational expenditure was found to be higher than the consumption expenditure for the year 2004 (Annex 2).

In general, we observe that remittances are primarily used for consumption expenditure followed by schooling and medical expenses implying, strong welfare improving impact of remittances in urban Ethiopia

4.2 Econometrics Analysis

In this section, the results of the econometric models are presented. As explained in the methodology part of the paper three separate models were estimated. The first two models are estimated using only the 2004 survey data. However, the last model is estimated using the panel data. STATA version 10 was used for data cleaning and estimating all the models. The results are presented accordingly.

4.2.1 Estimated Results of Econometric Model with Selection Control

After correcting the data for possible outliers by substituting the median, the selectivity model is estimated using the Heckman two step estimation procedures. It is tried to estimate the model using both total annual expenditure and log of per capita annual expenditure as a dependent variable for the expenditure function. However, the result of the logarithm of per capita expenditure is better in terms of the coefficients, p values and standard errors. Therefore, the reported results are using logarithm of per capita expenditure as a dependent variable for the expenditure function.

As reported in Table 11, results from the selectivity equation shows that λ (inverse mills ratio) is found to be positive and yet insignificant. This implies that there is no selectivity bias with regards to migration and remittance. In other words, migrants and recipients of remittances are randomly selected from a pool of population in the context of urban Ethiopia. This finding is consistent with a study by Adams (2006) in Ghana and Barham and Boucher (1998) in

Nicaragua. However, it is not consistent with a study by Acosta et al. (2007) from their examination of Latin American countries.

This result is contrary to the proposition that migrants are from a selected group with respect to income, skill, and education. However, according to Adams (2006) one of the possible reasons is that from the choice function families with the most educated members do not have higher tendency towards receiving remittances. This can be seen from Table 10 that the two human capital variables-secondary and university- are insignificant. Another possible reason could be related to the data used in this study as it incorporates both legal and illegal migrants and the respective transfer of remittances. This implies that especially the illegal migrants come from economically poor and less educated families, which is considerable in poor countries like Ethiopia.

Some of the results in the choice function are unexpected. For instance, all migration network variables turn out to be negative and insignificant. The dummy for sex of the head is found positive and significant at 1%. That is the probability of receiving remittance for female headed households is higher than male headed households.

Age of household head is positive and significant at 1% level as expected in the choice equation. This means older household heads do produce more migrants and receive more remittances. While number of household members under age five is negative and insignificant, number of household members above age 15 is positive and significant at 5% level. This means as the number of household members above age 15 increases the probability of migration and receiving

remittances also increases. Household size and location are found to be negative and insignificant.

Table 10: Estimates of the Choice Equation and the Marginal Effects of the Choice Equation-Heckman Two Step Estimates (Dependent Variable-Remittance is observed where remittance is greater than zero or not observed if it is less than or equal to zero)

	Choice Equation		Marginal Effects	
Variables	**coefficients**	**z values**	**Coefficients**	**z values**
Household composition variables				
Number of household members under age 5	-0.0658	-0.82	-0.0029	-0.05
Number of household members over age 15	0.0706	2.14 **	0.05811	2.18**
Age of household head	0.0178	6.80***	-	-
Household size	-0.0207	-0.68	-0.1428	-6.13***
Sex of household head(female Dummy)	0.3015	4.29***	-0.1087	-1.84*
Location of head is Addis Ababa(1=Addis,0 otherwise)	-0.014	-0.18	0.1449	2.50**
Migration network				
Amhara	-0.0612	-0.45	0.2252	2.24**
Gurage	-0.2546	-1.57	0.021	0.16
Oromo	-0.0273	-0.18	0.15408	1.39
Tigrayan	-0.0398	-0.25	0.3698	3.12***
Human capital variables				
Number of household members with no education	-0.1064	-2.62**	-0.0651	-2.04**
Number of household members literate	-0.0621	-0.83	-0.0519	-0.93
Number of household members with primary education	-0.0476	-2.07**	0.0092	0.51
Number of household members with secondary education	0.0052	0.22	0.0726	4.13***
Number of household members with technical and vocational education	0.0334	0.39	0.028	0.45
Number of household members with university education	0.0259	0.62	0.1842	6.18***
Constant	-1.0241	-5.29***	-	
Rho	0.3428		-	
Sigma	0.6805		-	
Chi2(30)	-		243.74	
Number of observations	1432		1432	

Note: * significant at 10% level ** Significant at 5% level *** significant at 1% level

The magnitude of the coefficients in the choice equation can not be directly explained as it only shows the direction and cumulative probability. The figures reported in second column of Table 10 are the marginal effects. But the results are the same as the estimates of the expenditure function so that it is not analyzed here.

The results of the expenditure equation can be directly analyzed like any OLS estimates. From Table 11 the result shows that two educational status variables are positive and significant. That means the as the number of household members with secondary and university increases by one the per capita consumption expenditure of households increases by 7% and 18%, respectively. The contribution of having technical and vocational study to consumption expenditure is positive but insignificant. Likewise, the other educational variables namely literate and no education are negative. No education even becomes negative and significant at 5% level. Location dummy is positive and significant. This implies the per capita expenditure of households living in Addis is higher by 14% compared to households in other urban centers. Female dummy is negative and significant at 10% level implying the per capita income of female headed households is lower by 10.8% as compared to the male headed households.

The sign of other demographic variables such as household size, number of household members under 5 and number of household members above 15 found as expected. Household size is negative and significant implying an increase in household size by 1unit leads to a decrease in per capita consumption by 14%. This confirms the welfare reducing impact of large household size which might be related to the tradition of considering children as an asset. On the other hand, an increase in the number of household members above 15 by one leads to a 5.8% increase in per capita consumption though households in this age category are in the productive age

group. The estimated result for the variable age of household head in the expenditure equation is negative as expected and it is excluded from the expenditure equation and it identified the model.

Table 11: Estimates of the Expenditure Function

Dependent Variable: Logarithm of Per Capita Annual Expenditure

	Selection corrected		With out selection correction	
	coefficients	z values	coefficients	z values
Household composition variables				
Number of household members under age 5	-0.0029	-0.05	0.0218	0.5
Number of household members over age 15	0.0581	2.18**	0.0241	1.53
Household size	-0.1428	-6.13***	-0.11494	-7.45***
Sex of household head(female Dummy)	-0.1087	-1.84*	-0.1764	-4.77***
Location of head is Addis Ababa(1=Addis,0 otherwise)	0.14499	2.50**	0.11428	2.76**
Migration network				
Amhara	0.2252	2.24**	0.0506	0.62
Gurage	0.021	0.16	-0.1152	-1.28
Oromo	0.154	1.39	-0.0248	-0.29
Tigrayan	0.3698	3.12***	0.1811	1.90*
Human capital variables				
Number of household members with no education	-0.0651	-2.04**	-0.0774	-3.91***
Number of household members literate	-0.0519	-0.93	-0.0407	-1.18
Number of household members with primary education	0.0092	0.51	-0.003	-0.28
Number of household members with secondary education	0.0726	4.13***	0.0536	4.34***
Number of household members with technical and vocational education	0.028	0.45	0.0315	0.71
Number of household members with university education	0.1842	6.18***	0.199	10.11***
Lambda(λ)	0.2333	1.38	-	-
Constant	4.6139	23.58***	5.0324	51.72***
Number of observations	1432		1445	

Note: * significant at 10% level ** Significant at 5% level *** significant at 1% level

4.2.2 Estimates of Predicted Per Capita Annual Expenditure

The results of OLS estimates that are used to predict per capita annual expenditure are presented in Table 12. The purpose of this regression is to predict the per capita annual expenditure in the case of no remittance and including remittances. It makes possible to see the contribution of migrants if they stay and work at home.

The test for heteroskedasticity rejects the null of homoskedasticity so that robust regression is applied to correct for heteroskedasticity. The test for omitted variable bias is also rejects the null of no omitted variable bias. Huber and White robust regression is conducted to correct for heteroskedasticity and omitted variable biases (Annex 5).

Even if the objective of this regression is to predict per capita annual consumption expenditure in the case of internal and international remittances using the coefficients, the regression result which is computed using logarithm of per capita annual expenditure is reported for the sake of comparison. In both cases the robust standard errors are reported. However, the coefficients of the regression that are estimated using per capita annual expenditure is used to find predict per capita expenditure. In addition, the magnitudes of the respective variables from this regression are analyzed.

From the four household composition variables two of them namely household size and female dummy are found to be significant as expected. The sign of number of household members under 5 which was expected to be negative found to be positive and insignificant. The sign of the other three is as expected. The female dummy variable is negative and significant that the per capita

consumption expenditure of female headed households is lower than the other category male headed families.

Only one of the human capital variables is found to be positive and significant. On the other hand, the number of household members with no education is negatively related to per capita consumption expenditure and it is also significant at 5% level. All ethnic dummies that are used as proxy for migration network are found to be negative and insignificant except the dummy for Gurage.

Table 12: OLS Estimates of Predict Per Capita Annual Expenditure and Log of Annual Per Capita Expenditure (Excluding Remittances in2004)

Dependent variable	**Annual Per Capita Consumption expenditure**		**Logarithm of annual per capita expenditure**	
Explanatory Variables	**coefficients**	**z values**	**coefficients**	**z values**
Household composition variables				
Number of household members under age 5	9.939	1.05	0.029	0.49
Number of household members over age 15	0.966	0.27	0.011	0.44
Age of household head	0.388	0.57	-0.001	-0.29
Household size	-17.16	-4.82***	-0.097	-4.36***
Sex of household head	-23.306	-2.30**	-0.192	-3.65***
Location of head is Addis Ababa(1=Addis,0 therwise)	7.800	0.71	0.070	1.19
Migration network				
Amhara	-51.234	-1.47	-0.206	-1.89*
Gurage	-55.246	-1.89*	-0.347	-2.93**
Oromo	-53.326	-1.56	-0.278	-2.35**
Tigrayan	-28.307	-0.68	-0.104	-0.78
Human capital variables				
Number of household members with no education	-7.792	-2.19* *	-0.097	-3.59***
Number of household members literate	-0.397	-0.06	-0.015	-0.33
Number of household members with primary education	-3.498	-1.61	0.022	-1.44
Number of household members with secondary education	4.050	1.57	0.032	1.76*
Number of household members with technical and vocational education	8.334	0.82	0.037	0.55
Number of household members with university ducation	27.262	5.98 ***	0.226	7.65***
Constant	258.344	8.02 ***	5.354	38.93***
Adjusted R^2	0.157	-	0.246	-
F statistics	9.38	-	15.09	-
Number of observations	719	-	716	-

Note: This result is based on the regression of non remittance receiving households

Note: * significant at 10% level ** Significant at 5% level *** significant at 1% level

Using the coefficients of column one of Table 12 per capita annual expenditure excluding remittances is predicted for all the three groups namely for households with no remittances, internal remittance, and international remittances. Based on this result, the per capita expenditure in the case of including remittances is calculated by adding the actual remittance on the predicted per capita annual expenditure for households. The average annual per capita remittances received in 2004 by households from internal sources was 293.5 birr and 508.8 birr from international sources.

Unlike the finding of Adams (2006) the result confirms that households who receive remittance from both domestic and international sources are better off otherwise (Table 13). Households who receive remittance from domestic sources (i.e. 132.3 Birr) have higher predicted per capita expenditure than the other two. Households with out remittance are found to be the poorest. The predicted average annual per capita expenditure for households who receive remittance from relatives and friends in Ethiopia was 7.5% higher than households that do not receive remittances. But the average predicted annual per capita expenditure for households that receive remittance from abroad was 3% higher than households with no remittances.

The predicted per capita annual expenditure for households which receive remittance from domestic sources is 246% larger than households with no remittance. On the other hand, the predicted per capita expenditure of households which receive remittances from international sources is five times higher than households that do not receive remittances. We can see that households that produce migrant are able to improve their living condition and are better off than households that do not have migrant family members.

Table 13: Predicted Annual per Capita Expenditure in Birr for Non-Remittance and Remittance Receiving Households in Urban Ethiopia (2004)

	Receive no remittances	Receive internal remittances	Receive international remittances	Percentage change(internal Vs no remittances)	percentage change(international Vs no remittances)
Predicted mean annual per capita expenditure(excluding remittances)	123	132.3	126.7	7.56	3
Predicted mean annual per capita expenditure(including remittances)	123	425.8	635.5	246	416.7
Number of observations	725	178	184	-	-

Note: Thirteen households receive remittance from both sources.

4.2.3 The Impact of Remittances on Household's Welfare: Panel Evidence

In this part of the paper it is tried to check the impact of remittances on household's welfare based on the data from the urban socio economic survey. For this model the data used includes all the five rounds. The total number of observation is 6302 after data cleaning and correcting for possible outliers and missing values. The regression is based on unbalanced panel. Attrition is one of the problems of the data. But the sample size after data cleaning is large so that it is possible to get efficient results.

The panel data used for regression was also corrected for inflation using consumer price indexes (CPI) of respective years. The consumers price index used in this study was taken from the Central Statistics Agency and rebased to 1994 to handle the variation in price. Logarithm of real per capita expenditure is used as a dependent variable. To avoid the problem of endogeneity remittances were instrumented using one year lag real remittances.

After the data is prepared for regression the model specified in equation [13] i.e. the fixed effect and then the random effect model of equation [14] are estimated.

The Hausman specification test was conducted to choose the appropriate model from the fixed and random effect models. This test checks whether the random effect estimates are different from the fixed effect estimates. As stated earlier in the methodology part of this paper, the fixed effect model is superior if there is correlation between the explanatory variables and the individual effect i.e. $\text{cov}(x_{it}, \alpha_i) \neq 0$.The random effect model is preferred if there is no correlation between the individual unobserved effect and the explanatory variables.

The test rejects the null hypothesis[11] indicating that the difference in coefficients is not systematic. That means the fixed effect model is consistent but the random effect model is not so. The F statistics is also confirmed the over all significance of the model.

Therefore, the results of the fixed effect model are used for further analysis (Table 14). The contribution of households head education for household welfare is positive and significant for three human capital variables. Heads educational levels primary, and secondary found positive and significant at 5% level whereas university education is significant at 1% level. That means the per capita expenditure of households with primary, secondary and university level education heads is higher than the base category no education. Moreover, primary education emerges significant at 5% level. However, technical and vocational education is found to be insignificant and positive.

[11] See annex 4 for details of the result of Hausman test.

The household composition variables are found as expected. Household size is significant and negatively correlated with household welfare. An increase in household size by one unit leads to a 9.5% reduction in real per capita annual expenditure. This result explains the downward pressure of family size on welfare especially if the majority of household members are children. Age of household head is positive and significant at 1% level. The dummy for sex is positive and insignificant.

Consistent with the finding of Quartey (2006) in his study in Ghana, one year lag real remittance found positive and significant as expected at 10% level. This implies that remittances improve household's welfare in the context of urban Ethiopia.

Table 14: Results of the Random Effect, Fixed Effect Regressions, and Pooled OLS

Dependent variable: logarithm of real per capita annual expenditure

variables	Fixed effect regression		Random effect regression		Pooled OLS regression	
	coefficients	t values	coefficients	Z values	coefficients	Z values
literate	-0.058	-1.06	0.065	1.58	0.161	4.89***
Primary	0.101	2.05**	0.243	7.51***	0.292	10.64***
Secondary	0.175	2.56**	0.525	13.30***	0.624	18.49***
Techvoc	0.197	1.39	0.598	7.43***	0.733	9.99***
university	0.322	3.64***	0.880	19.48***	1.029	25.32***
Age	0.011	4.52***	0.005	5.29***	0.006	7.74***
maledum	0.005	0.07	0.032	1.07	-0.005	-0.25
hhsize	-0.095	-12.61***	-0.079	-17.42***	-0.096	-22.21***
Awassa	-	-	0.085	1.53	0.094	2.39**
Bahirdar	-	-	-0.101	-1.71*	0.104	2.43**
Dessie	-	-	-0.359	-6.17***	-0.037	-0.9
Diredawa	-	-	0.145	2.93**	-0.309	-7.98***
jimma	-	-	-0.134	-2.87**	0.178	4.95***
mekele	-	-	-0.053	-0.79	-0.117	-3.10***
Remit_1	0.002	1.82*	0.002	2.35**	0.001	1.44
cons	2.031	15.37***	2.043	30.12***	1.958	37.35***
R-squared with in	0.049		0.035		-	-
R-squared Between	0.083		0.232		-	-
R-squared overall	0.072		0.170		0.171	
F statistics	20.64		-		98.27	
Wald chi2(15)			904.61		-	-
sigma_u	0.711		0.462		-	-
sigma_e	0.650		0.650		-	-
rho	0.544		0.335		-	-
Number of observations	6302		6302		*6302*	

Note: time invariant variables (location dummies) dropped from the regression in the case of fixed effect regression.

: * significant at 10% level ** Significant at 5% level *** significant at 1% level

In addition to the panel regression, simple pooled OLS regression is conducted and results are reported in the fourth column of Table 14. This is to see whether the panel regression is robust as compared to the pooled OLS. Test for hetroskedsticity and omitted variable is conducted .The Ramsey RESET test reject the null of no omitted variable. The test for hetroskedasticity is also rejects the null of homoskedasticity. To solve this problem of hetroskedasticity and omitted variables Huber and White robust regression carried out and the result reported in the above Table. Test for multicolinearity, VIF[12] confirm that there is no problem of multicollinearity.

All human capital variables found positive and significant at 1% level in the pooled OLS regression. Age of household head found positive and significant. Unexpectedly male dummy turns out negative and insignificant unlike the finding in the panel framework. However household size is negative and significant at 1% level as expected. That means the larger the size of household the lower the welfare of the family will be. Three regional dummies namely Mekele, Awassa and Dire Dawa found positive and significant as compared to the base category dummy for Addis Ababa.

[12] Variance inflation factor, $VIF = \frac{1}{1-R^2}$

Chapter Five
Conclusion and Recommendations

Remittances at the household level directly supplement the income of recipient households and provide financial resources for poor households and also affect poverty and welfare through indirect multiplier effects. Remittances are also associated with increased household investments in education, entrepreneurship, and health. However, remittances do have their own downside. For instance, household members might stop working and wait from month to month for remittances. Such negative incentive effects, a form of moral hazard, also results in an increase in the reservation wage. In addition to this, remittances might lead to ostentatious consumption in remittance receiving households, and encourage imports of luxury goods adding pressure on the country's import bill.

This study used representative urban socio economic household survey conducted in seven major urban centers in Ethiopia. The study examines the impact of remittances on household welfare, checks whether there exists selectivity bias with regards to migration and remittances, investigates how households allocate the remittances they received from different sources, and the type and sources of remittances. The study also revised different theoretical and empirical works related to the study topic.

The data set used for the study was conducted for five rounds covering 1500 households in each round. It was colleted in 1994, 1995, 1997, 2000, and 2004. To address the objectives of this paper descriptive and econometric methodologies are adopted.

The result from the descriptive analysis of the study reveals that the amount of remittances exhibits increasing trend in the study period. The main sources of remittances were international remittance, internal remittances and government transfers. In terms of the amount of receipt the highest proportion of remittances comes from abroad and from government transfer followed by domestic private transfers. Relatives of households were the primary source of transfer.

The study is also found that remittances are primarily used for food and non food consumption expenditure followed by expenditure for schooling and expense for medical services. In the study period, more than 80% of the recipients primarily used the remittance income for consumption.

Three separate regressions were conducted and the results emerged as follows. A selectivity analysis was employed to asses whether there is systematic difference among households that produce migrant with regards to skill, and ability which is not observed. A two step Heckman estimation procedure was adopted and it is found that there is no selectivity bias with regards to migration and remittance recipients.

It is found that even without remittances, the predicted per capita expenditure of households who receive remittance from local sources were 7.5% higher than households that do not receive remittances. Similarly, the average predicted per capita expenditure of remittance recipient from abroad was 3% higher than those households that do not receive remittances. Obviously, with remittances the predicted per capita expenditure of remittance recipient households was significantly larger than households that do not receive remittances.

The random and fixed effect panel data models are estimated and Hausman specification test was conducted to select the appropriate model. The test rejects the null hypothesis indicating that the fixed effect model is consistent and hence results of this estimate are used for further analysis. Welfare improving impact of remittances for urban households in Ethiopia is supported by the result from the fixed effect regression. One year lag real remittance is found positive and significantly improve the living conditions of urban dwellers. This has an implication on school attendance, improved health care facilities or improvement in the nutritional intake of the family members. Secondary and university education are found to enhance welfare. Dummy for sex and age of household head found positive but household size emerge negative and significant.

The study provides strong evidence on welfare enhancing impact of remittances. Therefore, it is important to exploit the welfare enhancing potential of remittances by designing and improving policies which increase the flow of internal and international remittances. Policies that improve the operation and efficiency of financial institutions like banks are important. Devising regulatory polices that amalgamate formal and informal remittance channels will enhance the flow of both internal and international remittances. In addition, improving the quality of service given by remittance service providers and reducing the cost and inconvenience of transferring remittance will increase the amount of remittance received. Government can effectively affect the cost, efficiency and quality of remittance services by enhancing competition in the market place through stimulating greater private sector interest in providing remittance services.

Moreover, strengthening the capacity of secondary deposit taking institutions, such as credit cooperatives, agriculture banks, and community banks, to offer remittance services will facilitate the flow of internal remittances.

On the other hand, devising incentives for the use of remittances can motivate recipients to invest their remittance income which has a trickle down effect to the poor. The most prominent type of incentive is special bank accounts that give emigrants a premium interest rate on their deposits. In some cases, interest from such accounts is fully or partly exempted from taxation.

Government could develop appropriate training/education programs to assist remittance receipts in making effective investment decision. Promoting financial literacy among remittance receivers can increase the consumption smoothing effect of remittances and enhance the capacity of remittance receivers to use remittances for creating sustainable livelihoods.

In addition, the appropriate infrastructure should be developed to generate favorable investment climate and be complement investments out of remittances. In turn, the incentive to invest the transfer, and any return on investment from such action and its subsequent productivity, will depend on the policy environment. Good investment policy environments will increase the return of investment and thus will raise the opportunity cost of consumption.

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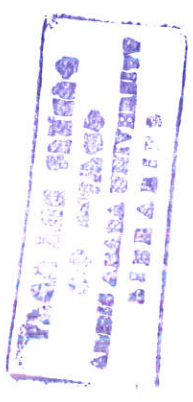

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Annexes

Annex 1: Mean Value of Transfer In Kind and Cash In Birr

Type	1994	1995	1997	2000	2004
In cash	500	512	884	1848	1402
In kind	227	115	136	392	92
Total	727	627	1020	2240	1494

Source: Author's calculation from EUSES

Annex 2: Secondary Use of Remittances by Households in Percent of the Total Recipient

Remittance used for	1994	1995	1997	2000	2004
Consumption	76	73	69	59	13
Pay for Children/Relatives Schooling	13	12	10	15	46
Medical Expenses	1	4	3	2	22
Investment in Land/House	2	1	2	1	5
Investment in Off-Farm Activity/Business	2	2	1	2	3
Marriage/Other Ceremonies	0		2	4	8
Pay Back Debts	3	2	1	1	1
Saved	1	1	1	2	2
Other	1	4	11	14	0
Total	100	100	100	100	100

Source: Author's calculation from EUSES

Annex 3: Use of Remittances by Households as a Percent of Total Recipient's –Third

Remittance used for	1994	1995	1997	2000	2004
Consumption (Food, Clothes, House Rent,	16	15	12	18	6
Investment In Land/House(Assets)	7	8	2	2	1
Investment In Off-Farm Activity/Business	3	5	7	3	2
Marriage/Other Ceremonies (Christmas, Funeral)		1	5	3	10
Pay For Children/Relatives Schooling/Transport	43	44	26	28	27
Pay Back Debts	6	5	3	2	3
Pay For Medical Expenses For Children	13	15	9	9	37
Saved	8	4	4	7	11
Other	5	4	31	29	4
Total	100	100	100	100	100

Source: Author's calculation from EUSES

Annex 4: Hausman Specification Test

Coefficients

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed	.	Difference	S.E.
literate	-.0554892	.0673566	-.1228458	.0366176
primary	.0945208	.2308232	-.1363023	.0377009
secondary	.1658787	.4965503	-.3306715	.0564671
techvoc	.1766046	.5567475	-.380143	.1157667
university	.302274	.8444387	-.5421647	.0758608
age	.0101907	.0042189	.0059718	.0022076
maledum	.0267253	.0440057	-.0172804	.0649126
hhsize	-.0961485	-.0805105	-.0156379	.0060082
rremit	.0032534	.0055393	-.0022858	.0004956

```
b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2 (9) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B)
                           =      104.22
                Prob>chi2 =      0.0000
```

Annex 5: Huber and White Robust Regression for the Equation that is used to Predict Per Capita Expenditure

Dependent variable	Annual Per Capita Consumption expenditure	
Explanatory Variables	coefficients	z values
Household composition variables		
Number of household members under age 5	1.179	0.26
Number of household members over age 15	-0.022	-0.01
Age of household head	-0.08	-0.48
Household size	-4.722	-2.61**
Sex of household head	-14.179	-3.34***
Location of head is Addis Ababa(1=Addis,0 otherwise)	2.744	0.6
Migration network		
Amhara	-10.776	-1.34
Gurage	-19.31	-2.10**
Oromo	-12.747	-1.43
Tigrayan	-11.861	-1.21
Human capital variables		
Number of household members with no education	-5.573	-2.59**
Number of household members literate	-4.366	-1.02
Number of household members with primary education	-1.693	-1.24
Number of household members with secondary education	2.022	1.36
Number of household members with technical and vocational education	5.546	1.01
Number of household members with university education	21.239	8.01***
Constant	139.951	12.64***
F statistics	9.99	-
Number of observations	719	

Note: * significant at 10% level ** Significant at 5% level *** significant at 1% level

Annex 6: Amount Received, Number of Recipients and Percent of Total Receipt

Type Of Receipt	1994				1995			
	No Of Recipient	Percent Of Total	Amount Received	Percent Of Total	No Of Recipient	Percent Of Total	Amount Received	Percent Of Total
Remittance From Abroad	159	17%	242249	27%	159	17.8%	302794	34%
Remittance From Domestic	205	22%	178844	20%	235	26.3%	145467	17%
Pension	282	31%	327201	37%	282	31.5%	325557	37%
Gift	99	11%	54169	6%	196	21.9%	63208	7%
Inheritance	3	0%	952	0%	1	0.1%	23500	3%
Dowry	24	3%	12944	1%	-	-	-	-
House Rent	21	2%	35804	4%	-	-	-	-
Food Aid	119	13%	29075	3%	-	-	-	-
Other	6	1%	2169	0%	21	2.3%	19106	2%
Total	918	100%	883407	100%	894	100%	879632	100%

Source: Author's calculation from EUSES

Amount Received, Number of Recipients And Percent of Total Receipt (Continued)

Type Of Receipt	1997				2000				2004			
	no of recipient	percent of total	amount received	percent of total	no of recipient	percent of total	amount received	percent of total	no of recipient	percent of total	amount received	percent of total
Remittance From Abroad	211	17%	446931	31%	201	20%	587624	38%	230	22.5%	919918	29%
Remittance From Domestic	237	19%	139426	10%	167	16%	217090	14%	221	21.6%	385544	12%
Pension	259	21%	328215	23%	305	30%	407482	26%	275	26.9%	1235725	39%
Gift	386	31%	147648	10%	164	16%	99352	6%	130	12.7%	144775	5%
Inheritance	-	-	-	-	8	1%	13980	1%	6	0.6%	45075	1%
Dowry	-	-	-	-	1	0%	208	0%	3	0.3%	10100	0%
House Rent	132	10%	270962	19%	101	10%	200523	13%	118	11.5%	418054	13%
Food Aid	17	1%	3579	0%	53	5%	7063	0%	30	2.9%	11559	0%
Other	21	2%	86205	6%	20	2%	4801	0%	10	1.0%	5952	0%
Total	1263	100%	1422966	100%	1020	100%	1538123	100%	1023	100%	3176702	100%

Source: Author's calculation from EUSES

Annex 7: Test for Multicollinearity (Variance inflation factor)

Variable	VIF	1/VIF
secondary	1.87	0.534810
primary	1.80	0.556832
university	1.47	0.682111
maledum	1.35	0.742744
age	1.33	0.754186
literate	1.31	0.765910
hhsize	1.13	0.883829
techvoc	1.13	0.886998
dessie	1.07	0.938910
diredawa	1.06	0.941520
mekele	1.05	0.950658
jimma	1.05	0.951551
bahirdar	1.04	0.960359
awassa	1.04	0.960957
remit1	1.01	0.993817
Mean VIF	1.25	

Annex 8: Tests for Hetroskedasticity and Omitted Variables (Test for specification).

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of lnrpccons

chi2 (1) = 10.22

Prob > chi2 = 0.0014

Ramsey RESET test using powers of the fitted values of lnrpccons

Ho: model has no omitted variables

F (3, 6283) = 20.05

Prob > F = 0.000

Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any university, and that all source of materials used for the thesis have been duly acknowledged.

Declared by:

Name: Bizuayehu Getachew

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Place and date of submission: _____