INTERNATIONAL MIGRATION, REMITTANCES AND POVERTY ALLEVIATION IN ETHIOPIA

Emerta Assaminew, Getachew Ahmed,
Kassahun Aberra and Tewodros Makonnen

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Table of Content

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Abstract

The paper explores the impact of international remittances on the Ethiopian economy and on the livelihoods and welfare of households. It uses macroeconomic data and data from the Ethiopian urban household survey. It was found that remittance shocks positively affect macroeconomic variables; the effect remained to be volatile in the very first periods after the shock. However, the impacts tend to sustain in the years after the fifth period. Moreover, through the positive (but inelastic) relationship between growth and poverty, private remittance inflows have an important implication on poverty in Ethiopia. International remittances significantly reduced the poverty incidence among the urban households in the country. It was also found that women are more likely to use remittance more effectively than their male counterparts.

1. Introduction

Migration refers to a change of the usual place of dwelling (Arsole et al, 2003 in Adamnesh, 2008). It could be either voluntary or forced (Kokpari, 2000). Voluntary migrants are those who change places within or beyond their country of origin at their own discretion rather than for other uncontrollable factors while forced migration refers to the coerced movement of people away from their home or place of dwelling. People leave their place of origin permanently or temporarily to take advantage of opportunities in host countries. These opportunities could be

economic, social, political, environmental or a combination of all. The tempting wage gaps between developed and developing countries, inviting immigration programs in the developed world, lack of democracy and good governance in the home countries, and poverty and environmental degradation in the home countries are some of the factors for international migration (Portes,1996).

Although it is difficult to calculate the number of migrants worldwide with precision, recent estimations suggest that nearly 200 million people live outside their country of birth. There is little suggestion that this trend will abate in the future: indeed, projections of demographic and economic imbalances between the north and south suggest a persistent pressure for migration (World Bank, 2006). According to the United Nations estimates (UN, 2006), between 1960 and 2005 the number of international migrants in the world more than doubled, passing from an estimated 75 million in 1960 to almost 191 million in 2005, an increase of 116 million over 45 years.

Migration has diverse socio-economic impact ranging from increasing better opportunities for the migrant to an improved livelihood of sending households and to contributing economic growth. According to the World Bank (World Bank, 2006), remittances [from migrant workers] have reduced the share of poor people in the population by 11 percent in Uganda, 6 percent in Bangladesh and 5 percent in Ghana. Remittance income is also associated with higher school attendance in the Philippines, improved health outcomes in Guatemala and increased investment in microenterprises in Mexico. Migration can also bring benefits to households in developing countries beyond the effects of remittances: the prospect of better employment opportunities can improve incentives for education; and knowledge transferred by the diaspora may result in improved health practices and improved labor productivity. Moreover, remittances have a positive and significant impact on economic growth, probably through increased domestic investment. However, the same report has found that the substantial inflow of remittances in a number of Latin American countries put pressure on exchange rates, damaging external competitiveness.

Ethiopia is challenged by different migration patterns and dynamics, which have significant political and socio-economic ramifications for the country. The country has one of the highest African diaspora populations, which undoubtedly affects the government's sustainable development and poverty reduction programs. According to Dejene (2005), international migration is increasing starting from the late 1970's, which is the result of the political instability at that time. Nowadays, 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 (Dejene, 2005). One of the perspectives that have grown to be more popular in the discussion about migration is the

increasing remittances being sent to the country. According to figures from the National Bank of Ethiopia (the Central Bank of the country) private individual transfers have grown tenfold from a meager USD 177 million in 2000/01 to USD 1.8 billion in 2008/09. This dramatic increase has arisen for the most part due to the increasing stock of migrants.

However, while migration originating from relatively poor to rich countries is well known, very little is known about the large number of Ethiopians in such countries and the role of remittances they send back home to poverty reduction. The remittances the diaspora send to their home country constitute a large amount of foreign exchange used for poverty alleviation at the household level. It also adds to the stock of international foreign exchange reserve of the country leading to macroeconomic impact such as economic growth. The objective of this study is to see the livelihood consequences of these remittances on the welfare of households and the macroeconomic impact of inflows of international migrant remittances on poverty reduction.

The rest of this document is organized as follows. A review of migration patterns, legal and policy issues in Ethiopia will be assessed in the second section. We devoted two separate sections for our analysis of results. We do this because of the different impact remittances have at the household level and on the economy at large. As a result, we employed two different data sets and methodological approaches. While the macroeconomic impact, on the Ethiopian economy, of international remittance, is discussed in the third section, the fourth section deals with livelihood consequences of migration and its concomitant inflow of remittances on the welfare of households. Section five concludes.

2. Migration Patterns: Legal and Policy Issues in Ethiopia

2.1. Patterns of International Migration and Remittances

Generally, international migration flows from less developed to industrial countries. Although the stock of migrants decreased in recent years, the number of migrants continued increasing. The share of Africa has dropped from 12% in 1970 to 9% in 2000. But this is not because the number of African migrants decreased, but rather the share of countries such as China, India and the Philippines outnumber Africa in recent years. International migration is concentrated in few countries. By the end of 2005, 12% of the world's countries hold 75% of migrant stocks (World Development Report, 2005).

The 2005 World Migration Report indicated that Australia, North America, Europe, Africa and Latin America host 18.7%, 12.9%, 7.7%, 2% and 1.4% respectively of the world's migrant stock. The three top migrant receiving countries are United States, Russia and Germany accepting 35 million, 13.3 million and 7.3 million migrants respectively. On the other hand, China, India and the Philippines are the three most migrant sending countries with 35 million, 20 million and 7 million people. While Mexico, India, the Philippines and Egypt received USD 11 billion, 8.4 billion, 7.4 billion and 2.8 billion respectively from remittance receipts, USA, Saudi Arabia, and Germany remit USD 28 billion, 15 billion and 8 billion, respectively (World Migration Report,2005).

Migration has a mixed effect on the sending and receiving countries. For instance, United States of America is the leading beneficiary of migration as it is populated by immigrants and their descendants. The young, in this country, go to college or universities as they are not interested in manual work. Thus, the gap is filled by migration of young people from developing countries. In addition to being source of foreign exchange, migration might also have potential benefit to home countries as it may ease population pressure in developing countries, and reduce unemployment problem of developing countries.

This argument, however, is very controversial as most of the emigrants from developing countries are qualified and potential entrepreneurs. In this case, migration may exacerbate the unemployment problem of the host country instead of lessening it. Furthermore, since most of the migrants are economically active, it may jeopardize the long term development effort of sending countries by drawing out the economically active segment of the society (Siliji, 2001). In this regard, migration is a costly experience for sending countries as lots of their most valuable medical doctors, engineers, accountants etc. left their home countries which invested lots of resources to educate them. The worst part of the story is that emigrants may not save enough money which is left of their own expenses and send back home (Siliji, 2001).

International remittance inflow is increasing substantially from 2004 onwards. Developing countries are the beneficiaries of remittance inflow receiving the lion's share -75% of the total global inflow in 2007. Remittance inflow to Sub-Saharan countries rose from USD 8 billion in 2004 to 12 billion in 2007. But it is still very minimal both in absolute magnitude and relative to the global inflow (See Table 1.1).

2.2. Ethiopia's International Migration Patterns

Ethiopia is one of the countries with a large number of migrants in North America, Europe and the Middle East. According to Tefere and Beruk (2009), by the end of 2005, more than 1 million Ethiopians migrated to the rest of the world. Looking for a better education, employment opportunities, and political instability are considered major causes for migration. Political migration was intensified in Ethiopia during 1970-1990 due to political instability at the time. Although the stock of migrants is decreasing since 1990, migration is still important and a hot issue in the current day Ethiopia.

The UN 2008 Revised Population Database shows that 546,000 Ethiopian migrants live in different parts of the world. This estimate is, however, very small vis-à-vis the Ministry of Foreign Affairs of Ethiopia estimates which sometimes reach as big as 1 million (Tefere and Beruk 2009). According to the Population and Housing Census conducted in 2007, Ethiopia's population grew by about 2 million people. At the same time, close to 120 thousand Ethiopian left their country every year.

Table 1.1: Ethiopia's migrant stock from 1970-2010 (thousands of people)

Indicator	1970	1975	1980	1985	1990	1995	2000	2005	2010
Estimated number of international migrants at mid-year	395	392	404	584	1,155	795	662	554	548
Estimated number of refugees at mid-year	21	9	11	180	42	371	228	108	91
Population at mid-year (thousands)	30	34	37	43	48	57	66	75	85
Estimated number of female migrants at mid-year	171	175	184	268	548	376	312	261	258
Estimated number of male migrants at mid-year	223	217	220	315	607	419	351	293	290
International migrants as a percentage of the population	1.3	1.1	1.1	1.3	2.4	1.4	1	0.7	0.6
Female migrants as percentage of all international migrants	43.4	44.7	45.5	46	47.4	47.3	47.1	47.1	47.1
Refugees as a percentage of international migrants	5.2	2.2	2.7	30.9	64.2	46.7	34.4	19.6	16.6

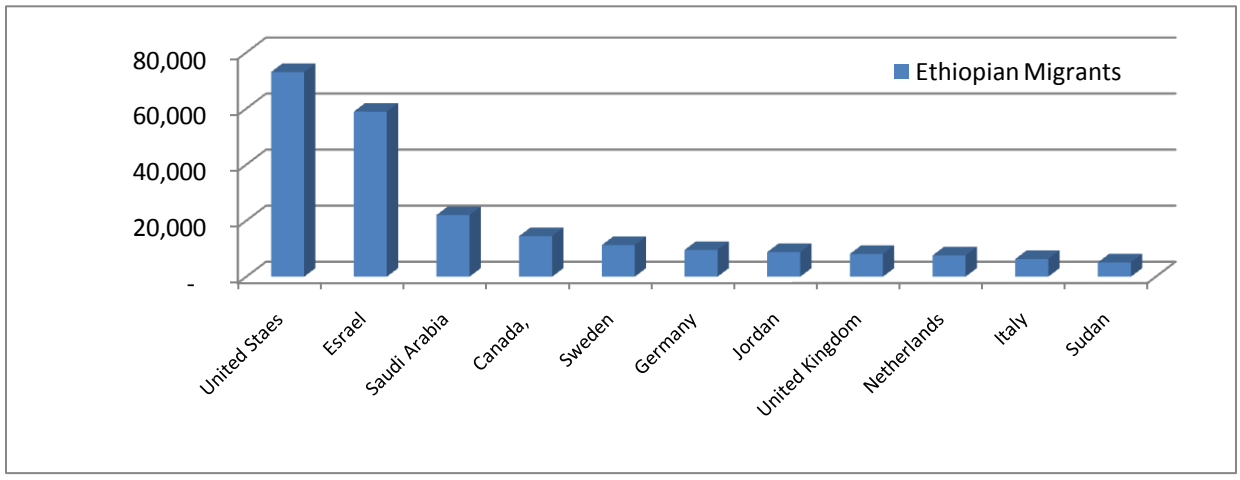
Source: The Revised Population Database (2008)

Political and economic reasons accounted for the increase of Ethiopian migrants since the 1970s. But, these are by no means the only reasons. According to Abye (2008), some migrants come from a well to do family who can afford the travel and living expenses abroad. Those who are facing hardship at home are not those who migrate because the poor can't afford to travel. Hence, it can be argued that although the initial reason of migration is political instability, the recent migration trend can be accounted for by the desire to acquire western culture and enjoy better standard of living. This, however, does not include those who migrate to the Middle East whose case is mostly economic. According to Adamnesh (2006), survey on Ethiopian returnee shows a search for education in host country, political instability at home and better standard of living in host country accounted for 54%, 27% and 10% respectively of the respondents.

A study by Bathseba (2007) shows that Ethiopia lost 74.6% of its skilled manpower during the period 1980-1991. By end 2002, Ethiopia lost more than one third of medical doctors. However, during the 1980-1991 period, only 25% of those who had gone for further studies returned. Moreover, according to Abye (2008), out of the 5000 PhD holders and 5000-6000 MDs the country has produced during the last 100 years, over 30% live and work abroad. As a result, the country spends about USD 5.3 million per annum on expatriate professionals to fill its human resource gap.

People migrate from Ethiopia mainly through family ties, networks, labor brokers, smugglers and traffickers. Business meetings and conferences are also becoming a major source of migration these days. Young women are the main victims of traffickers in Ethiopia. According to Emebet (2006) as sited in Atnafu (2006), 14,000 Ethiopian women were domestic workers in Beirut and 17,000 in Lebanon. But official data shows only 6,148 women left the country legally during 1992-2001. This shows that a significant number of Ethiopian women go through illegal channels. Some women also move to Saudi Arabia and other Arab states through Oumra and Hajji. On the other hand, the major channel that people migrate to USA is via diversity visa (DV) lottery.

Fig 2.1: Number of Ethiopian Migrants by country of residence, circa 2000



Source: Migration Policy Institute quoted in Adamnesh (2008)

The above graph (see Fig 2.1) shows the top eleven destinations of Ethiopian migrants: United States, Israel, Saudi Arabia, Canada, Sweden, Germany, Jordan, UK, Netherlands, Italy and Sudan.

Recent data obtained from the Ministry of Foreign Affairs of Ethiopia indicated that Ethiopian migrants to the Gulf States are estimated to be 190 thousand. Ministry of Labor and Social affairs, on the other hand estimated it 13.5 thousand only during 1992 – 2001 (see Table 2.2). The discrepancy may be due to the fact that the latter does not consider those who migrate through illegal channels. In the recent years, it is the young who are moving to the Gulf. A study conducted on women trafficking in Ethiopia confirmed that most women leaving for the Gulf are in the age of 20-30 years.

Table 2.2: Ethiopian legal migrants in the Gulf States since 1992-2001

Year	Men	Women	Total
1992	1,794	1,688	3,482
1993	2,112	1,020	3,132
1994	251	1	252
1995	397	298	695
1996	803	356	1,159
1997	1,186	728	1,914
1998	757	894	1,651
2000/2001	-	1,163	1,163
Total	7,300	6,148	13,448

Source: Ministry of Labor and Social Affairs quoted in Atnafu, 2008

2.3. International and National Legislations about Migration

The fact that migration concerns different states and countries makes it a complicated subject with respect to instilling and enforcing certain principles. Setting up different laws concerning migration requires the tandem efforts of different countries recognizing the common importance of treating migrants properly. Migrants and their families are sometimes subject to different types of unfair treatments in the host countries. This may be in terms of discrimination in work places, intolerance of their culture and poor living conditions. Different types of migrants face different difficulties and should be seen distinctly. There are labor migrants, refugees and asylum seekers. The nature of migration for the three groups is different. Labor migrants go to the host country looking for employment while refugees migrate because of fear of persecution in their country of nationality.

To address this problem different efforts have been made worldwide. In July 1951, a convention relating to the status of refugees was signed in the United Nations. Underlined in this convention are principles in the treatment of refugees and stateless persons. Provisions are included that bind both refugees and the country they find themselves in. Article 2 of this convention states that refugees should abide by the laws of the country in which they seek refuge. Articles 3 to 11 state general provisions and provisions specific to certain category of refugees. Some of the general ones include non-discrimination based on race, religion, political opinion; the right to practice religion; the provision of human rights and other provisions.

In July 2003, the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families came into force. It was ratified by 33 countries by 2005. The main focus of the convention is to raise issues that relate human rights with migration. This convention is a result of years of discussion that began in 1972. It has a number of provisions including, non discrimination with respect to rights, and human rights to all migrants (both regular and irregular migrants), the promotion of sound, equitable and humane conditions in connection with international migration, and others.

Some countries devise specific policies for migrants to effectively use the advantages of migration and minimize the disadvantages. One of such policies is the “Temporary Migration” policy adopted in some countries. A paper by Mohammed Amin (2007) talked about ensuring temporariness of migration by enhancing the cooperation of the origin and the host countries. In most developing countries migration seems to be skewed towards skilled labor force hurting the human capital base of sender countries. On the other side, developed countries don’t want above a certain level of unskilled people in their countries. Temporariness of migration could alleviate the impacts of both of the conditions above since the developing countries won’t lose their productive human capital if the migration is temporary. At the same time developed countries

wouldn't mind having more unskilled migrants if it is temporary. However, temporariness could only be achieved if there is cooperation between the country of origin of the migrants and the host country.

The policy framework in Ethiopia regarding migration is very weak. There is no distinct migration policy except the Private Employment Agency Proclamation of the Ministry of Labor and Social Affairs that deals only with agencies that facilitate employment of Ethiopians abroad. The motivation of the proclamation itself concerns the protection and safety of Ethiopians sent and employed abroad. This proclamation stipulates the preconditions necessary to obtain a license to establish an agency that facilitates employment of Ethiopians abroad. It also requires the agency to establish an office in Ethiopia and a branch in the country it intends to send the workers. The Ministry obliges the agency that it has to give proper orientation to the worker before the contract is signed; facilitate remittance of earnings according to the law of the country of work; annually report to the Ministry about the condition of the worker; keep appropriate records of the worker; and upon termination of work contract notify the nearby embassy about the condition of the worker.

The proclamation also clearly states that the work should fulfill the minimum conditions of work given in the Ethiopian Law. With regard to penalties, the proclamation states that whosoever engages in illegally transferring people without a license will face imprisonment of up to 10 years and a fine up to Birr 25,000. In the case where the rights of the Ethiopian have been violated in the country of work, the punishment could extend to up to 20 years of imprisonment and a fine of Birr 50,000. Other than this proclamation that deals with employment agencies there is no specific policy or strategy that officially guides the government regarding migrants.

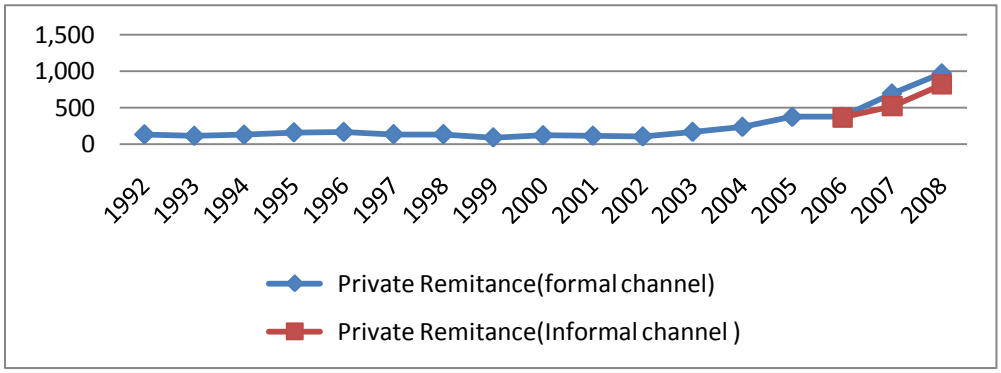
2.4. Remittance Transfer and Channels in Ethiopia

Ethiopian migrants are engaged in various occupations in different countries. For instance, in USA, according to the 2000 US Census, 30.6%, 26.6%, 20.5% and 19.3% of Ethiopian migrants are engaged in sales & office, management & professional, service occupation and production & transportation respectively. Similarly, as reported in Agnarson (2006), the share of Ethiopian migrants in Europe in paying works has increased in recent years. On the contrary, most of the male migrants in the Gulf participated as drivers. Of course, some are employed as factory workers, mechanics, laborers, farmers, guards and waiters and in very few cases in such professions as engineers and accountants. Regarding women workers in the Gulf, they are often recruited to work as housemaids except in few cases where they are hired as waitress.

The major channel that Ethiopian migrants could contribute to the country's development and poverty reduction is through remittance. Remittance is the major source of foreign exchange in Ethiopia. According to the National bank of Ethiopia, USD 1.8 billion was received from private

individuals living in the rest of the world in 2008/09 (see Fig. 2.2). USD 969 or 54% of this was channeled through the official system, the balance inflow via informal channels.

Fig 2.2: Flow of formal and informal remittance (millions of USD)



Source: National Bank of Ethiopia

Assuming 1.5 million Ethiopian migrants living abroad, the per capita remittance inflow is estimated to be about 100 USD per month. This is very small relative to other countries. However, it may be because remittances which go through the informal system are under estimated. Cognizant of this problem, the National Bank of Ethiopia (the central bank) issued a directive (FXD/30/2006) to improve the operation of the formal remittance transfer system and to enhance incoming remittance transfers and regulating processes. Following this policy initiative, some positive developments have been seen from 2006 onwards (see Fig 2.2).

Remittance is not the only means that Ethiopia could benefit out of its huge number of migrants abroad. Skilled Ethiopians contribute to the country's poverty reduction endeavor by filling the gaps in areas like education and health. In this regard, the International Organization of Migration (IOM) initiated two projects: Return and Reintegration of Qualified African Nationals (RQAN) and Migration for Development in Africa (MIDA). The United Nations Development Program (UNDP) participated in this effort by placing a National United Nations Volunteer Program.

The Ethiopian government established an office, the Ethiopian Expatriate Affairs, under the Ministry of Foreign Affairs in January 2002. The main duties and responsibilities of the office are to provide accurate information to Ethiopian migrants and to conduct research to participate the diaspora in the development of the country. In this regard some positive results have been seen though a huge number of skilled and unskilled labors are still remained abroad.

3. The Macroeconomic Impact of International Remittances in Ethiopia

Resource poor developing countries are constrained by lack of foreign exchange to finance the increasing demand for imports associated with domestic investment requirements. For many of these countries, remittances constitute the larger part of foreign exchange earnings; sometimes larger than aid, foreign direct investments and export revenues. The past few decades have witnessed rapid increase in the international flow of remittances all over the world. Remittances have recently become the second largest source of foreign exchange both as a percentage of GDP and in absolute terms globally (see Giuliano and Ruiz-Arranz, 2005). Remittances, therefore, become a relatively attractive source of foreign exchange earnings for developing countries.

Nevertheless, little attention has been paid to analyze the economic impact of these financial transfers, especially on economic growth and poverty reduction. There is also very little effort exerted in some of the developing countries with many migrants to collect as much foreign currency as possible through remittances as their effort through exports. Likewise, despite the gradually increasing level of remittance inflows to Ethiopia, little attention was given to appreciate the impact of remittances on growth and hence poverty reduction. Thus, this particular section will contribute to two strands of the literature in developing countries: one, on the literature that links remittances to production and growth, and two, on the literature that associates remittances and their role on poverty reduction in poor countries.

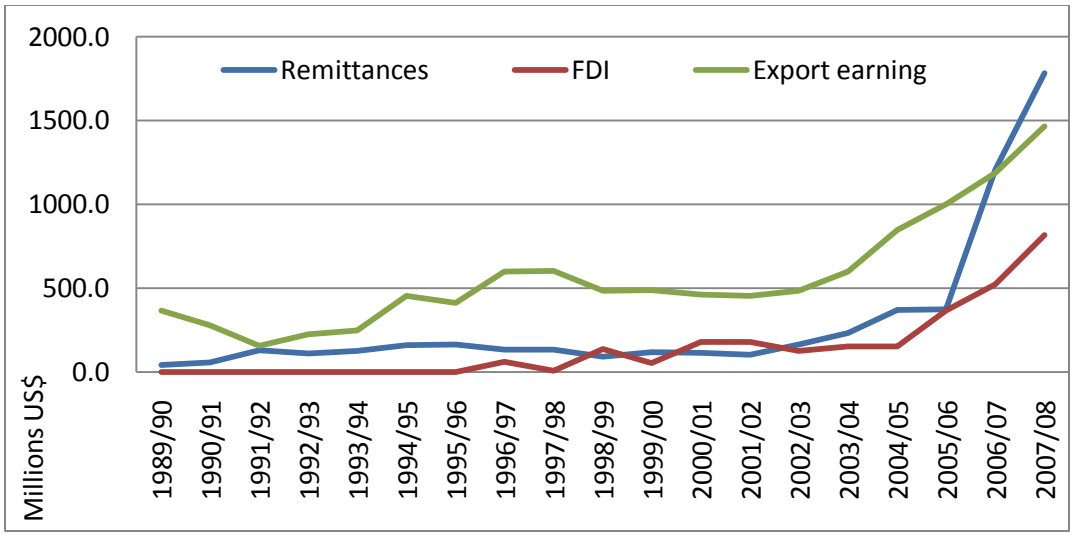
3.1. Remittances in Ethiopia: A Snapshot

Broadly speaking, remittances are thought of as unrequited transfers, sent by migrant workers back to their relatives in their country of origin. Based on the IMF's balance of payments manual, there are three components generally mentioned as constituting remittances, namely compensation of employees (part of the income component of the current account), worker's remittances (part of current transfers in the current account) and migrants' transfer (part of the capital account). Workers' remittances are current private transfers from migrant workers who are considered resident of the host country to recipients in their country of origin. If the migrants live in the host country for a year or longer, they are considered residents, regardless of their immigration status. If the migrants have lived in the host country for less than a year, their entire income in the host country should be classified as compensation of employees. Migrants' transfers include financial items that arise from the migration (change of residence) of individuals from one economy to another.

Despite the clarity of the guiding definition of remittances by IMF, there have been limitations on the coverage and availability of long time series data for a developing country like Ethiopia. As mentioned in the previous section, a good sum of the remittances is still being channeled through unofficial mechanisms including through black market, the exchange rate premium being one of the causes. Existing data shows that the official individual international transfers in Ethiopia reached US$ 1,784 million in 2008 increasing year-on-year by 33.3 percent on average from US$ 41.3 million in 1990. Remittance grew by higher rate than the economic growth over the same period (which is 4.6 percent).

As Figure 3.1 shows, remittances have become important source of foreign exchange in Ethiopia relative to other sources. A critical look into the data reveals that remittances in Ethiopia have been steadily growing contributing to a significant share in recent years. However, this recent progress in remittance receipts make it a series with higher standard deviation as can be evidenced from our calculation of its volatility (standard deviation).

Figure 3.1: Trends in remittances, FDI, and export earning in Ethiopia



Source: National Bank of Ethiopia

This may be due to its growing trend until the flow stabilizes. Despite the growing share of remittances as a source of foreign currency to the country, Ethiopia is among the least beneficiary in terms of remittance generation even as compared to the Horn of African countries let alone the rest of sub-Saharan Africa (see Table 3.1). Remittance flows in Ethiopia are very low compared to Kenya and Sudan, for example. However, the inflow of remittances leaps strangely in 2007. This strange feature may be linked to flows associated with the celebration of the Ethiopian Millennium.

Table 3.1: Remittance in selected African countries (millions of US$)[1]

Countries	1990	1995	2000	2005	2007
Egypt	4284.0	3226.0	2852.0	5017.3	7655.6
Ethiopia*	41.3	158.0	117.7	370.7	1208.0
Kenya	139.3	298.3	537.9	805.0	1588.0
Sudan	62.0	346.0	641.0	1016.1	1769.2
Tanzania	--	1.0	8.0	18.5	14.3

Source: World Bank (2007)

When we see the relative contribution of remittance inflows in the selected countries, we can see that remittance receipts are positively correlated with income growth (see Table 3.2). As shown in the Table, the correlation was strong and positive in selected countries in Africa; through the

[1] Data on Ethiopia is from National Bank of Ethiopia

causality issue is not discussed here. In some countries it is possible to expect negative correlation between the two due to an implied counter cyclicality of remittance flows relative to the country's income.

Table 3.2: The correlation coefficient between remittance flow and economic growth in selected countries

Countries	Correlation	Sign
Egypt	0.77	Positive
Ethiopia	0.56	Positive
Kenya	0.79	Positive
Sudan	0.33	Positive
Tanzania	0.63	Positive

Source: World Bank (2007) and own computation

3.2. A Simple Accounting Framework for Remittance Flows

This section attempts to identify possible scenarios for the macroeconomic impact of remittance flows in a small open economy like Ethiopia. Berg et al. (2006) provided a full-fledged theoretical model on the macroeconomic impact of aid flows in an economy. However, in this paper, following the work of Hansen and Headey (2009), we rather adopt an accounting approach by using balance-of-payments and the national accounts system as an organizing framework. The main purpose of our effort is to clearly identify the channels by which increases in remittance inflows can affect macroeconomic aggregates, and hence the macro economy and poverty. Unlike Berg et al. (2007), we here follow a simple macroeconomic framework to reveal the possible impact of remittance inflow on macro variables (economy wide aggregates) from which we will be inferring the impact of private remittance inflows on national poverty.

3.2.1. Remittance Flow from Private Individuals in the Ethiopian Balance of Payments

Transfers in Ethiopia are classified as official and private. Individual/private transfers are best termed as remittance. Hence, we can specify the following balance-of-payments identities for the Ethiopian economy by specifying it in a useful manner for our purpose:

$$CA_t = (X_t - M_t) + W_t - (i_t L_{t-1} + r_t D_{t-1}) + A_t^g \quad \text{.....[1]}$$

$$KA_t = \Delta L_t^o + (A_t^l - A_t^r) \quad \text{.....[2]}$$

The current account at a certain time (CA_t) is defined as the net export of goods and services (export, X, less import, M) plus net private transfers (W), mainly remittances and worker compensation less net interest payments to foreigners ($iL + rD$), with interest payments on market loans (iL) separated from interest payments on concessional aid loans (rD). The final term in the current accounts definition [1] is that of aid grants (A^g). In equation [2], the capital account (KA) is specified simply as the net change in non-aid foreign debt (L^o), which has both private and public elements, plus the foreign aid loan given within the year (A^i), less repayments of principal on the aid loans (amortizations).

Using the fact that the difference between the current account and the capital account equals the change in foreign reserves (ΔR), we have the following decomposition of the overall balance-of payments:

$$W = A_t^r - A_t^g - A_t^l + \Delta R_t + (M_t - X_t) + (i_t L_{t-1} + r_t D_{t-1}) - \Delta L_t^0 \quad \ldots\ldots\ldots [3]$$

In the above identity, we have remittance (W) in the left hand side. The identity implies that from a purely accounting perspective, an increase in the private remittance can influence the economy in five various ways. Remittances may: (i) increase foreign reserves; (ii) increase net imports of goods and services; (iii) finance interest payments on foreign debt (both aid and non-aid debt); (iv) finance a decrease in net aid inflows; and (v) decrease net external debt (or increase capital flight).

In countries with foreign exchange shortages such as Ethiopia, there must be some kind of optimal way of 'distributing' the remittance inflow across the balance of payments (BoPs) components shown above, as remittance increases are often observed under a variety of different circumstances (e.g. macroeconomic crises at home). The most common use of remittances is to fund for an increase in net imports. Therefore, we define the rate of absorption of an increase in remittance as the increase in net imports relative to the increase in remittance. Letting Δ denote change over time, absorption of remittance in a given period can be specified as:

$$Absorbtion = \frac{\Delta(M_t - X_t)}{\Delta W_t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [4]$$

Equation [4] reveals that *absorption* can be seen as a measure of the direct, real resource transfer associated with an increase in the remittance inflow. Remittance inflow affects absorption through its impact on demand for private sector imports via aggregate demand.

3.2.2. Remittance Flow from Private Individuals in the Ethiopian National Accounts System

Remittances appear directly in the national accounts, specifically as part of disposable gross national income.

$$desp.GNI_t = Y_t + W_t - (i_t L_{t-1} + r_t D_{t-1}) + A_t^g$$
$$= (C_t + I_t + G_t) - (M_t - X_t) + W_t - (i_t L_{t-1} + rtD_{t-1}) + A_t^g \quad \ldots\ldots.[5]$$

The notation given in equation [5] above follows the standard national income accounting representation: Y_t is GDP at time t, C_t is private consumption at time t, I_t is private sector investment (gross capital formation) at time t, G_t is government consumption at time t, and desp.GNI$_t$ is disposable national income. In the second line of the same equation, Y_t is treated as equal to $(C_t + I_t + G_t) - (M_t - X_t)$.

From the above identity, it is evidenced that subtracting net interest payments on foreign debt from GDP and then adding remittance and aid grants yields disposable GNI[2]. Hence remittance has an impact on both GNI and disposable GNI. As can be seen from equation [5], an increase in private remittance/transfer has no direct impact on the main macroeconomic aggregates constituting GDP. However, in a very foreign exchange and resource scares country like Ethiopia, every additional hard currency can be viewed as 'a blessing from heaven' and will be used to finance net imports from abroad thereby affecting the components of GDP. Such type of characterizing remittance in Ethiopia can help in linking remittances with the macro economy, and hence see the change in total domestic demand (spending) due to change in remittance inflow:

$$Spending = \frac{\Delta(C_t + I_t + G_t)}{\Delta W_t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots..[6]$$

From the above definition, the private sector may expand its consumption and investment due to private transfers coming into the economy.

3.2.3. Linking Absorption and Spending to Production

Once defining absorption and spending, the other exercise is attempting to see the change in GDP due to change in remittances. This can be represented by the following representation:

[2] While subtracting net interest payments on foreign debt from GDP and then adding remittance yields GNI.

$$\Pr oduction = \frac{\Delta Y_t}{\Delta W_t}$$
$$= Spending - Absorbtion \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [7]$$

Based on this identity, we can discuss different short-run responses as combinations of the spending and absorption of increased inflows of remittances.

In an effort to trace the dynamic impact of remittance flows to highly aggregated macroeconomic variables such as absorption and spending, we will below present a simple macro econometric model for private remittance flows using variables such as export and import.

3.3. A Simple Econometric Model of Remittance Inflow to Ethiopia

In this sub-section, we are interested in looking at the macroeconomic impact of international remittances to Ethiopia. From the above preliminary discussion, we have learned the need for a dynamic way of modeling the macroeconomic impact of international remittance on a small open economy like Ethiopia. Accordingly, we have formulated and apply a simple dynamic econometric model that seeks to account for the country's net imports, GDP, and domestic demand following a sudden increase in international remittance. This method will help us link/infer the impact of remittance shocks on aggregate variables such as absorption, spending and output. For the purpose of modeling the dynamic relationship, we have chosen and used a vector autoregressive (VAR) model because it does not impose too much a priori structure. Our starting point for the econometric model is the national income accounts identity, measured in constant birr (local currency) units and given as:

$$Y_t = C_t + I_t + G_t - (M_t - X_t)$$
$$= D_t - NM_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [8]$$

In the second line of equation [8], GDP (Y_t) is specified as domestic demand (D_t) less net imports (NM_t), the changes of which are directly linked to our definitions of absorption and spending.

Similarly, the remittance inflow is modeled as W_t. The national income accounts variables in equation [8] and the remittance variable W_t are used to specify a VAR model to investigate the dynamic macroeconomic impact of remittance in the Ethiopian economy. However, because equation [8] is an identity, the covariance matrix of disturbances is singular. As shown in Barten (1969) according to Hansen and Headey (2009), the parameters of the model can be consistently

estimated by omitting one of the variables from the system. In the present model, it doesn't matter which variable is omitted. We omit export from the model, meaning that the VAR is specified to include remittances, GDP, domestic demand, and import (a component of spending) [i.e., we consider a 4 x 1 vector $Z_t = \{W_t, Y_t, D_t, M_t\}'$]. The resulting estimable VAR model can be formulated as:

$$Z_t = \sum_{k=1}^{p} \Gamma_k Z_{t-k} + \eta_t \quad \text{.....[9]}$$

where k=1,….,p; and η_t is a zero mean innovation process with $E(\eta_t \eta_t') = \delta^2$ and $E(\eta_t \eta_s') = 0$ for $t \neq s$. All variables are deflated by CPI to take into account of the domestic price volatility.

Most macroeconomic variables tend to be non-stationary at level. If the variables included in *Z* happen to be non-stationary (as most of macroeconomic variables are) and if we suppose that they are stationary by differencing, then we can exploit the idea that there may exist co-movements of these variables and possibility that they will trend to move together towards a long-run equilibrium state (i.e. co-integrated). Hence, using the Granger representation theorem, we may posit the following testing relationships that constitute a vector error-correction (VEC) model

$$\Delta Z_t = c + \sum_{i=1}^{p-1} \Phi_i \Delta Z_{t-p} + \Pi Z_{t-p} + \mu_t$$

with r co-integrating vectors $(1 \leq r \leq 4)$, Π has a rank r and can be decomposed as $\Pi = \alpha\beta'$ with α and β both are $4X1$ matrices. Johansen's approach uses a maximum likelihood procedure to test the co-integrating rank r and estimate the parameters β and α.

3.4. The Data

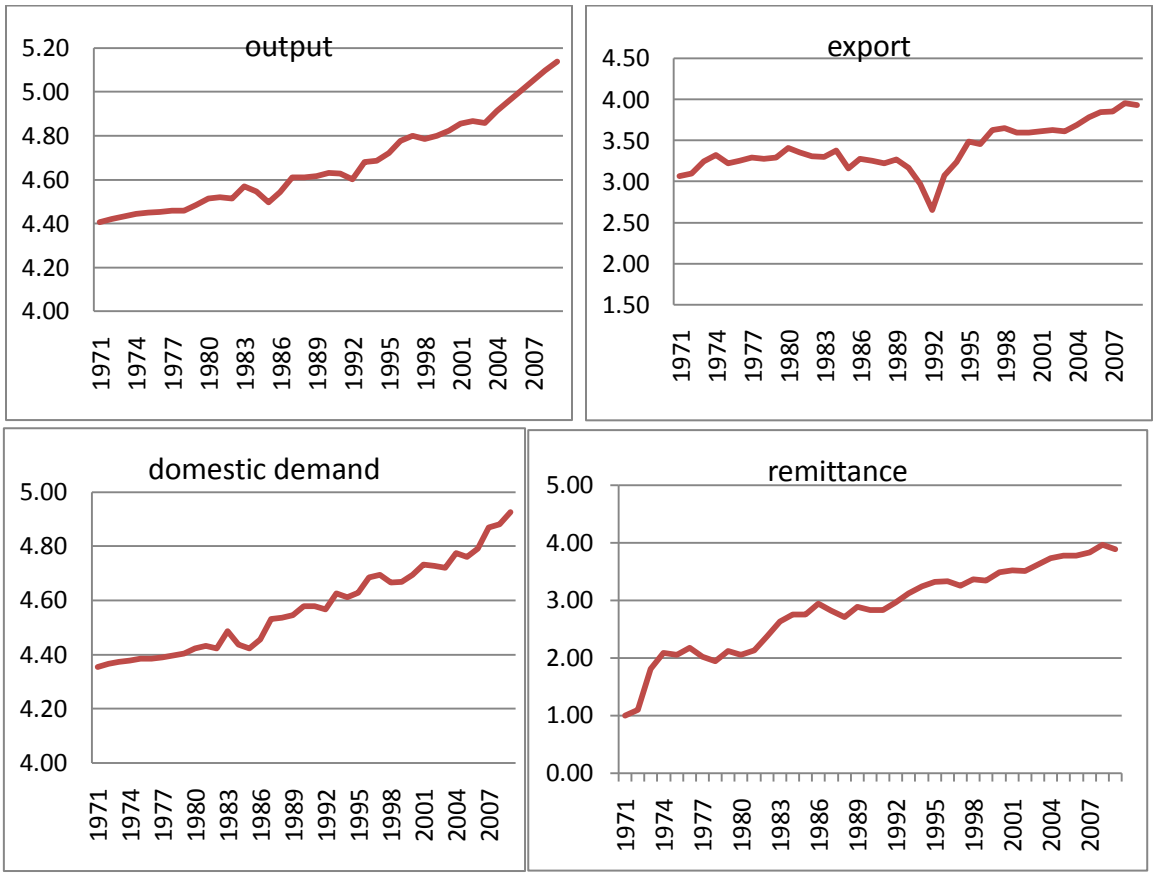
This sub-section describes the definition, source and some characteristics of the data used for the VAR analysis on the impact of remittance inflows on the Ethiopian economy.

The required data for the VAR analysis is extracted from official sources such as the National Bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MoFED). While the remittance (W)[3], import (M) and export (X) data are collected from NBE, the data on GDP(Y) is extracted from the national accounts of MoFED. Domestic demand is derived from own computation using the identity. We based our analysis on time series data on the above variables. The topology of the variables in log is given in Figure 3.2.

[3] Due to data limitation on remittance by private individuals, which is available only after 1989/90, we base our analysis on private transfers data for the sake of having adequate observations (since 1971).

Variables are trending upward very steeply recently. We can also see that domestic absorption follows a closer trend to that of GDP. Export has been a very volatile series since the 1970's. On the other hand, remittances have been persistent in most of the periods despite new volatility in recent years.

Figure 3.2: The topology of selected variables (real and in logs) (1971-2009)



3.5. Empirical Results

3.5.1. Univariate Characteristics

While the graphical presentation of the important variables in the preceding section provides the properties of Ethiopian time series data, it does not provide the complex dynamic pattern of the data. Hence, we have adopted a more rigorous method (VAR modeling) described above.

Before we estimate the system that governs the relationship among our variables, we check for the order of integration of these variables. In analyzing the univariate characteristics of the variables, Augmented Dickey-Fuller (ADF) test was employed to decide the order of integration of the data series. The report on the outcomes of the test is presented in Table 3.3.

Table 3.3: Unit root test (1971-2009)

Series	Level	1st Difference	Critical Value		Order
			1 %	5%	
LRW	-1.3056	-6.9118	-3.6210	-2.9434	I(1)
LRY	1.9631	-5.0211	-3.6210	-2.9434	I(1)
LRD	1.3105	-5.8646	-3.6210	-2.9434	I(1)
LRX	-0.9855	-4.1518	-3.6210	-2.9434	I(1)
LRM	0.7108	-4.4767	-3.6210	-2.9434	I(1)

*The ADF tests were carried out with intercept; variables are real and in their logs.

The unit root test indicated above shows that our data series are not stationary in level, i.e. they are I (1). We accordingly should test for the existence of cointegration. If the series are cointegrated, that means there is long run relationship between them.

In testing for the existence of cointegration, we have undertaken Akaike information criterion and Schwartz criterion tests for choosing the optimal lag length. The selection criterion decided (1 1) as the optimal lag length and the unrestricted VAR model is estimated using this optimal lag (see Table 3.4).

Table 3.4: Choice of optimal lag

Lag length[4]	Akaike	Schwartz
(1 1)	-7.71	-6.85
(1 2)	-7.69	-6.12
(1 3)	-7.33	-5.04

To test for the existence of cointegration, we use the methodology developed by Johansen. Testing for trend stationarity, some of the included variables were found to be trend stationary. Hence, in checking for cointegration, we have assumed intercept and trend in the cointegraion equation. The test reveals the existence of one cointegrating vector. The cointegration test result is indicated below.

[4] We have started from lag length of 1 as we have no exogenous variables in the model.

Table 3.5: Unrestricted Cointegration Rank Test (Trace)
Sample (adjusted): 1973 2009
Included observations: 37 after adjustments
Series: *LRW LRD LRY LRM*
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.544223	66.96163	63.87610	0.0269
At most 1	0.486670	37.88885	42.91525	0.1454
At most 2	0.225047	13.21593	25.87211	0.7212
At most 3	0.097182	3.782656	12.51798	0.7733

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Given our assumptions, we have found cointegrating relationship. We have verified the existence of cointegration among our non-stationary series and can proceed to the VEC specification. An important application of interest to accomplish using the VEC approach is conducting the short-run impulse response analysis and variance decomposition to innovations. In the following part we have analyzed the adjustment of important macroeconomic variables to remittance shocks using impulse response representation. The long-term relationship among the variables based on the unrestricted VAR is provided as annex. The variables were estimated in logs.

3.5.2. Impulse Response Function

An impulse response function traces out the effect of a one standard deviation shock to one of the innovations on current and future values of the endogenous variables. A shock to the i^{th} variable directly affects the i^{th} variable, and is also transmitted to all of the endogenous variables through the dynamic structure of the VEC.

Table 3.6 provides the response of all variables to a one standard deviation shock of remittance inflows. It shows how variables included in the model are responding to a one standard deviation (increment) in remittance flows at a certain point, given the dynamic relationship modeled. The impulse response function based on the VEC analysis reveals that remittance responds highly during the first year after its own shock. Specifically, the impact persists for the first year before

it shows a quick decline during the succeeding two years. After reviving in the fifth period, it maintains its rate. The shock remained to have a positive impact all over the period considered. This implies that Ethiopia cannot assume a certain increment in remittance flow as smooth and permanent shock as it is fluctuating after the shock. On the other hand, domestic demand is not quickly reacting to a certain standard deviation in the remittance variable. However, through time, domestic demand reacted positively (but volatile) to the innovation in the remittance variable to reach its maximum in the third period.

Table 3.6: Effects of Cholesky (d.f. adjusted) one S.D. remittance innovation (real variables)

Period	Log remittance	Log domestic demand	Log GDP	Log import
1	0.243507	0.007351	0.013000	0.059218
2	0.266721	0.019420	0.028068	0.088395
3	0.243077	0.020769	0.031854	0.100770
4	0.235449	0.018473	0.029357	0.094428
5	0.241757	0.017320	0.027661	0.090016
6	0.246297	0.017621	0.027829	0.090218
7	0.246159	0.018035	0.028362	0.091568
8	0.244881	0.018088	0.028490	0.091941
9	0.244515	0.017991	0.028384	0.091693
10	0.244751	0.017944	0.028315	0.091508

The impulse response of imports (the component of spending) to a one standard-deviation innovation to remittance shocks mirrors the response of domestic demand. Imports expand in the second period after the shock and reached its maximum in the third period. The rate consistently declines up to the fifth period. The impact of a one standard-error shock maintains its level all through the period considered. Given the level of export, this implies that a surge in remittance flows increases the importing capacity (spending) of the foreign exchange scarce economy of Ethiopia. Like domestic demand and imports, GDP is volatile as a result of remittance shock in the first four years; taking an increasing rate up to the third year and then declining up to the fifth period. The response of output for any remittance innovation is owing to the impact on domestic demand and spending as a result of shocks in private remittance.

3.5.3. Variance Decomposition Results

Variance decomposition is another method of depicting the system dynamics. In contrast to impulse response function which depicts the effects of a shock to one endogenous variable on to

the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. It gives information about the relative importance of the random innovation to the variable in the VAR. More specifically, variance decomposition shows the proportion of shocks in the remittance innovation attributed to all endogenous variables included in the model.

The variance decomposition shows that a one-time shock in the remittance variable explains the larger part of movement in remittances. Remittance shocks explain about 88.6 percent of the variance in itself in just a year after the innovation (see Table 3.7). The contribution on remittance of own shock declined only to 67 percent in five years time implying remittance shock persists somehow during the period considered. On the other hand, remittance shocks explain close to 6.8 percent of the variation in the domestic demand in the tenth year from less than 0.1 percent just after the remittance shock. Surprisingly, the variance decomposition exposes that remittance shocks explain only 4.7 percent of the variation in imports (hence spending) over one-year horizon before it rise to around 22.8 percent at the end of the tenth year. The variance decomposition of a remittance shock to domestic demand and imports reveals an interesting observation. Remittance shocks affect imports more than domestic absorption implying the role of additional foreign exchange earned through remittances in increasing spending. Variation in output as a share of total variation as a result of remittance innovation increases from 6.6 percent in the second period to 8.6 percent in the third period.

Table 3.7: Variance decomposition (in %) of remittance shocks (variables are real)

Period	S.E.	Log remittance	Log domestic demand	Log GDP	Log import
1	0.243507	100.0000	0.000000	0.000000	0.000000
2	0.383690	88.60063	0.122999	6.660249	4.616120
3	0.495150	77.30137	1.303668	8.572304	12.82266
4	0.591597	69.99067	3.635418	8.358807	18.01510
5	0.673323	66.92302	5.097915	7.943828	20.03524
6	0.745003	65.59417	5.742464	7.769215	20.89415
7	0.810324	64.67329	6.082282	7.725747	21.51868
8	0.871031	63.87657	6.355942	7.698621	22.06887
9	0.927871	63.23473	6.594130	7.662477	22.50867
10	0.981388	62.74583	6.784964	7.628591	22.84062

3.6. Linking Remittance to Poverty

Reasonably high amount of foreign currency is flowing to the country in the form of remittances. The inflow can be boosted if the country acknowledges remittances as an important source of external resource and means for smoothing consumption to many Ethiopians.

Macroeconomic time-series analysis in developing economies is constrained by lack of adequate data to establish strong statistical relationships with high degree of freedom. In Ethiopia, poverty surveys were conducted only four times at national level: 1980/81, 1995/96, 1999/2000, and 2004/05.[5] There has been no adequate effort made to interpolate and generate time series data on poverty indicators for the rest of the years. So as to link remittance and its impact on poverty at macro level, we thus have only two other options: one being, to apply cross-country panel data analysis; the other being, to infer the role of international private transfers on poverty based on elasticity measures obtained from empirical works on the poverty impact of growth. We have found the second option less laborious and we here summarize works which established the linkage between growth and poverty in countries or regions with similar/comparable socio-economic conditions with Ethiopia. In the previous sub-section of this part of the document, we have tasted the output/production implication of remittance among others. We will, therefore, be able to infer from that how strong the magnitude and to which direction remittance will be affecting poverty in Ethiopia.

Table 3.8: The empirical link between growth and poverty in low income countries

Authors	Elasticity measure(net)	Study on
Emerta A. (2009)	-0.53	Sub-Saharan Africa
de Janvry (1999)	-0.6 to -1.08[6]	Latin America
Wodon(1999)	-1.29 to -1.98[7]	Bangladesh

Studies such as those included in Table 3.8 showed that there is generally an inverse relationship between growth and poverty. The elasticity measure however is inelastic in some cases. The impact of growth on poverty would be improved if growth initiating policies are non-distortionary in income distribution. In situations where growth is not accompanied with inequality, any unit of growth registered can result in a more than proportional reduction in poverty indicators.

[5] However, still Ethiopia is considered as one of the data rich countries of the SSA (in relative sense).

[6] -0.6 is for rural poverty and -1.08 is for urban poverty

[7] Elasticity level of -1.29 for upper and -1.98 for lower poverty lines

A more direct study on the impact of international remittances on poverty using a cross country analysis is the one by Jongwanich (2007). Other things being equal, the author found that an increase in remittances by 10 per cent leads to a reduction in poverty incidence by 2.8 per cent in Developing Asia and the Pacific Countries. Using data from African countries, Anyanwu and Erhijakpor (2009) also found that a 10 percent increase in official international remittances as a percentage of GDP will lead, on average, to a 2.9 percent decline in the share of people living in poverty. Indeed, this result provides strong, robust evidence of the poverty-reducing impact of international remittances to Africa. Assuming a more or less similar transmission mechanism of international remittances to poverty reduction in Ethiopia, we can affirm a strong poverty reducing impact of international remittances in Ethiopia. Our assertion was supported by the micro economic approach employed in the succeeding section of this document. The section also supplements the analysis made in this sub-section.

4. Livelihood Consequences of Migration on the Welfare of Households

As discussed in the preceding sections, migration has emerged as an important policy issue in developing countries, with supporters advocating the many opportunities it offers to the development of both the migrant sending and receiving economies. The transmission channels through which migration and remittances impact various living standards and human capital outcomes are numerous. The most obvious is the income channel, namely that remittances directly contribute to total income of a household.

Remittances lead to increased consumption and investment, implying a positive effect on poverty reduction and human capital (Sasin and McKenzie, 2007). Previous empirical findings show that international remittances have an important source of improvement in the welfare of households in Nepal (e.g. Subedi, 2009) and in Ghana (e.g. Quartey, 2006). Subedi (2009) showed that remittance income is an important source of household income in Nepal. It accounts for about 11 percent of all households' income and more than two-thirds of the remittance recipient households' income. Moreover, Quartey (2006) found that migrant remittances improve household welfare and the flow of such remittances increase in times of economic shocks in Ghana, hence they are counter-cyclical. Thus remittances help to minimize economic shocks that reduce household welfare, particularly for food crop farmers. A study by Gupta et al. (2007) 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 USD 1 a day.

As indicated in the previous sections, inflows of international remittances have been increasing in Ethiopia for the last 15 years. Remittances through the formal banking system have grown for the last 13 years although those in the form of commodity inflows have shown a downward trend. Those transferred through the black market is expected to be much bigger.

Remittances directly augment the income of recipient households by providing financial resources for poor households. They affect poverty and welfare through indirect multiplier effects. Remittances are associated with increased household investments in education, entrepreneurship and health—all of which have a high social return in most circumstances. The objective of this section is to see if remittances from Ethiopian migrants abroad can improve the welfare status of Ethiopian households.

4.1. Modeling Strategies and Estimation Methods

Two analytical tools are basically used in this section to see the impact of international migrant remittances on the welfare of Ethiopian households. Both descriptive and regression analysis are used.

4.1.1. Poverty Profile

Whether remittances improve the welfare of households can be achieved by constructing a poverty profile using consumption as a welfare indicator (see for e.g. Couduel et al., 2002; Ravallion, 1994; Tassew et al., 2008; Bigsten et al., 2005). This way of analysis allows us to make poverty comparison and provides us with information on the welfare status of households having international remittances and those not having these remittances.

The choice of consumption as a welfare indicator is that it gives a better indicator of living standards. Consumption is believed to vary more smoothly than income both within a given year and across the life cycle (Duclos and Araar, 2006; Couduel et al., 2002). Moreover, income is more erratic than consumption and consumption is not equal to consumption expenditures because the value of consumption equals the sum of expenditures on goods and services purchased and consumed in a given period plus the value of goods and services consumed but not purchased such as gifts and those produced by the household itself plus the consumption of durable goods and services owned (Thorbecke, 2005; Douclos and Araar, 2006).

The poverty line estimated by the government of Ethiopia was taken as given in this study. This estimate was based on the cost of 2,200 kcal per day per adult food consumption with an allowance for essential non-food items. The levels of real total per adult household consumption expenditure was estimated ETB 1075.0 per annum per adult equivalent at 1995/96 national average constant prices.

A group of poverty indices called the Foster-Greer-Thorbecke (FGT) class are used to construct poverty profile. Given the variable of interest $\mathbf{y_i}$ (i.e. consumption) ordered in an ascending order where z is an exogenously given poverty line below which an individual is classified as poor, we can have the following ratio,

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - y_i}{z}\right]^\alpha \quad \ldots\ldots(4.1)$$

, where q is the number of poor people below the poverty line, n is the total number of people in the population, z is the poverty line and y is consumption level. Alpha (α) is an ethical

parameter which is considered to be greater than or equal to zero. For $\alpha = 0$, it is the head count ratio, for $\alpha = 1$, it is the poverty gap and for $\alpha = 2$, it is the squared poverty gap[8].

4.1.2. Regression Analysis: Binary Outcome Model

Our objective is to see the impact of remittances on welfare (poverty being one measure). Hence, we can have the following functional relation,

$$y_i = F(rem_i, \chi_i, \varepsilon_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.2)$$

In the above expression, y_i represents consumption, rem_i is a remittance, χ_i other explanatory variables and ε_i is the error term. An increasingly common approach is to construct a regression model of welfare measure against a variety of household and community characteristics (see for e.g. Ravallion, 1996; Couduel et al., 2002; Bigsten et al., 2002b; Bigsten et al., 2005). Following these authors, a binary outcome model is specified using the latent variable approach[9]. The general binary outcome models can be written as the conditional probability to be poor, i.e. $p(w_i = 1/x_i)$, as

$$p(w_i = 1/rem, x_i) = E(w_i/rem, x_i) = F(rem, \chi_i, \beta).$$

If we define the logistic function $\Lambda(\cdot) = \frac{\exp(\cdot)}{1+\exp(\cdot)}$, we can get the following logit model,

---

[8] A specialized software package, Distributive Analysis/Analyse Distributive (DAD), is used to estimate these indices employed in this study. It is designed to facilitate the analysis and comparison of social welfare, inequality and poverty using a micro data.

[9] In the latent variable approach, the probability of a household to be poor is determined by some underlying latent variable, y_i/z_i, that captures the true economic status of the household and where y_i is consumption level, and z_i is an exogenously given poverty line. This variable is then a function of a vector of observed household characteristics defined in linear form as $y_i/z = X'\beta + \varepsilon_i$. While we 'pretend' not to observe this variable directly, we do observe a binary outcome w_i such that

$$w_i = \begin{cases} 1 \text{ if } \frac{y_i}{z} < 1 \\ 0 \text{ otherwise} \end{cases}$$

We then define for the variable $w_i = 1$ if the individual is poor (i.e. $y_i < z$) and $w_i = 0$ if non-poor.

$$F(rem_i, \chi_i, \beta) = \Lambda(rem_i, \chi_i)'\beta) \quad \text{..... ....(4.3)}$$

In this model, there is a non-linear relationship between the independent and dependent variables with well defined probabilities. This property makes it superior to other linear models such as the linear probability model in poverty analysis. Moreover, the logit model has a relatively simpler form than the probit model for its first order conditions and asymptotic distributions. A maximum likelihood estimation (MLE) is applied to estimate the logit model.

4.2. The Nature and Source of Data

The data used in this study came from a household survey undertaken by the department of economics of Addis Ababa University. The survey was conducted in 2004 in collaboration with the Center for the Study of African Economies of Oxford University, the Departments of Economics of Gotemborg University and Michigan State University. The sample size stands at 1500 urban households in seven major towns/cities. The survey collected include data on the demographic characteristics of households, their educational and health status, ownership of assets, employment and income, credit availability, consumption, remittance, expenditure and a host of other household variables. Households are selected by systematic sampling from the *kebeles* (the lowest administrative unit in the country).

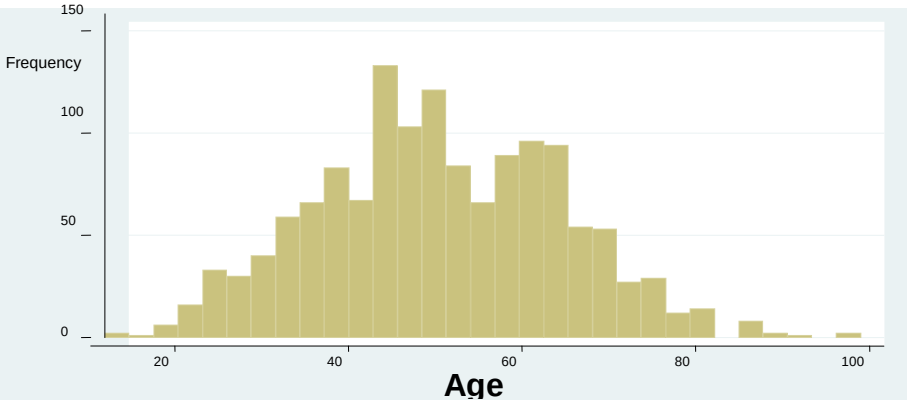
4.3. Estimation Results and Discussion

4.3.1. Descriptive Analysis

Some of the variables included in the study are described in this sub-section. These include consumption (dependent variable), remittances (main explanatory variable) and other control variables such as the age of the household head, literacy, education, household size, employment, gender and remittances from local sources.

The age distribution of the households covered in the study has a normal distribution. Approximately 85 percent of the respondents are within the age range of 15-65. The age distribution of 1490 respondents is presented in the following histogram. The most frequently appearing age group is 45 to 47 with a frequency of 140 respondents. Since the issue of remittance involves different age ranges, it is important to have respondents with a normally distributed age profile.

Figure 4.1: Age distribution of respondents



Regarding the educational status of respondents, close to 55 percent of the respondents are literate which means they can at least read and write while 27 percent are illiterate. The education information for approximately 18 percent of the respondents is missing.

Table 4.1: Educational attainment of respondents

Education Accomplishment	Freq.	Percent	Cum.
Illiterate	404	27.11	27.11
Literate	91	6.11	33.22
Primary	338	22.68	55.91
Secondary	252	16.91	72.82
Tertiary	19	1.28	74.09
Technical and Vocational	118	7.92	82.01
Missing	268	17.99	100.00
Total	1,490	100.00	

Again a fairly representative sample has been taken with regard to educational background to see the importance of remittance in the different education levels. As expected the frequency at each level decreases as we go up the education ladder. The data also shows a notable negative correlation between literacy and poverty as expected. However, the magnitude of correlation is not as strong as expected since it shows a correlation coefficient of less than 0.5.

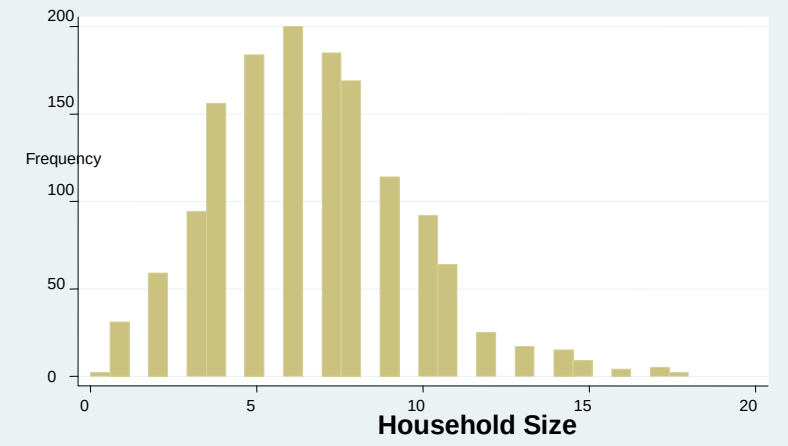
Table 4.2: Correlation matrix relating literacy and poverty in the data

	Literate and Above	poverty
Literate and Above	1.0000	

poverty	-0.2204	1.0000

Another important variable of concern is the household size. Depending on the rate of dependency in the specific household it is generally believed that as household size increases the incidence of poverty increases as the per capita consumption is expected to decline in an average household. In the data at hand, most frequently appearing household size is 5 to 6 which is nationally representative as the average household size in Ethiopia is 4 according to the 2007 census results in the urban areas.

Figure 4.2: Household size distribution of respondent households



Turning now to whether or not the respondents are working or not, 55 percent of the respondents are working while 40 percent are not working. This characteristic is slightly higher than the national urban unemployment rate of 26 percent in the 2004/05 labor force survey. As regards gender of respondents, approximately 52 percent of them are male respondents while 42 percent are female respondents. Around 6 percent didn't give information. This is another variable that reflects the real gender distribution in Ethiopia.

Table 4.3: Gender distribution of respondents

	Freq.	Percent	Cum.
Female	624	41.88	41.88
Male	782	52.48	94.36
Missing	84	5.64	100

Total	1,490	100	

Apart from individually looking at the household characteristics it is also important to look at the correlation among them. The table below presents the correlation matrix of the major variables used in the analysis.

Table 4.4: Correlation matrix of poverty related variables

	Poverty	Age	Education	working	HH Size	Remittance
Poverty	1.0000					
Age	0.0884	1.0000				
Education	-0.248	-0.3734	1.0000			
Working	-0.0234	-0.3542	0.2424	1.0000		
Household Size	0.1816	0.1635	-0.0012	0.0172	1.0000	
Remittance	-0.1033	0.0968	-0.0124	-0.1029	0.0591	1.0000

Poverty seems to relate better with education and household size negatively and positively respectively, as expected. The subject of this study, remittance, has a negative correlation with poverty as expected but with a weak coefficient.

4.3.2. Poverty Profile

One way of observing the effects of remittance on poverty is to compare the incidence of poverty of those who get remittance and those who don't. To do this we need to construct a poverty index on each group. To construct poverty profile using our data, we make use of the Foster-Greer-Thorbeke (FGT) measure of the incidence, depth and severity of poverty. Incidence refers to the percentage of people living below a minimum threshold or poverty line (1075 birr using 1994/95 prices) as defined by local standards. Depth refers to how far below this poverty line the poor are on average. The severity, on the other hand, measures relative deprivation among the poor. Thus, while incidence of poverty (P0) identifies the poor population, the depth (P1) and severity (P2) tells the level of poverty the poor experience.

The FGT index is calculated on 1373 household observations after adjustments. Out of these, only 162 get remittances from abroad and the rest don't. The analysis is done by calculating the FGT index on those who get remittances and those who don't. The following table summarizes the results obtained from the calculations. As can be seen from the table, the head count index of the total sample is 0.37. This means, overall 37 percent of the sample households are below poverty line (i.e. poor). This figure is a little bit greater than the estimate made by Ministry of Finance and Economic Development, 0.35, for urban households with samples greater than used in this study; however, there is no a statistical difference.

Table 4.5: Head count, poverty gap and severity of poverty of the sample households

FGT	Total Sample	Households Having Remittances	Households Having No Remittances
Head Count Index (α=0)	0.37	0.22	0.39
Poverty Gap Index (α=1)	0.13	0.07	0.14
Poverty Severity Index (α=2)	0.06	0.03	0.07
Poverty Line	ETB 1075.00		

Coming to the headcount index for those households who receive remittances, we can see that only 22 percent of them are below poverty line, much below the index for the total sample. On the other hand, the same index for households who do not have any sources of international remittances was found to be higher than that for the total sample. It is even much higher than the index for households who receive remittances. We can say that the proportion of people in poverty is close to half for those who get remittances from abroad compared to those who don't get these remittances. This difference was found to be statistically significantly different. This result tells us that these remittances do really contribute in reducing poverty and improve the welfare of households in the sample.

4.3.3. Regression Analysis

In this section, we try to focus on the effects of remittances on the probability of being poor in a typical urban household in Ethiopia. We hypothesize that the probability of being poor is inversely related with the fact that the household receives remittances. Other covariates included in our model are the age of the head of the household, household size, education accomplishments of the head of the household such as reading and writing (literacy), completion of primary school, completion of secondary school, graduating in technical and vocational and university graduate. The gender of the head of the household and the interaction term between gender and remittance to capture the gender disparity on effective utilization of remittance to reduce poverty and dummy for employment (whether the household members are working or unemployed) are also included in the model. For we are interested in the effect of international remittances on household poverty, we see the effect of international and domestic remittance separately.

Based on the household survey, we have estimated the logistic equation and obtained the marginal effects. Regression statistics show that the model generally fits the data well. We reject the null hypothesis that all variables jointly have no significant impact on poverty probabilities

using Wald Test at alpha =0.01%. The specification test shows there is not significant information to reject the model entailing the model is correctly specified. The marginal effects of regression result show that all the predictors have the correct signs and almost all are significantly different from zero at conventional levels of significance.

As can be seen in annex 6, the marginal effect of remittance is negative and significant at 1% level. It indicates that international remittance has a significant effect on the probability of a household's being non-poor suggesting that the probability of a household being poor decreases by 25 percent when a household receives remittances. Furthermore, it was also noticed that the marginal effect of receiving an international remittance is relatively large next to higher education attainments (secondary and technical & vocational and university) on poverty incidence in Ethiopian urban households.

The marginal effect of remittances from domestic sources, on the other hand, shows it has no significant impact on the probability of a household being poor. This is presumably due to the fact that a significant proportion of the urban dwellers are themselves poor and hence they send a small amount of remittances to other urban areas. The marginal effects of gender are negative but statistically insignificant suggesting that differences in gender do not have any effect on the poverty status of households in the sample. To see whether the association between poverty and remittance is gender dependent, we used the gender and remittance interaction term (i.e. remittance & gender). The marginal effect of remittance & gender is significant at 5% suggesting the gender of recipient of the international remittance has significant impact of poverty incidence among Ethiopian urban households, all other things being equal. The sign of this variable tells that if the receiver is male headed the probability of being poor increases by 0.265 compared to that of female headed households.

The marginal effect of education shows that if the head of the household attend primary, secondary, vocational and university schools, the probability of being poor dropped significantly at common levels of significance. The marginal effect of literacy, on the other hand, has the expected sign but is only significant slightly at 10%. Overall, the probability of a household being poor decreased with education at all levels. The marginal effect of age of the household has the expected sign but not significant. The marginal effect of workers, household size is positive and significant at 1 percent. These effects suggest that the probability that the household falls into poverty increases with the size of the household and the number of workers in the household.

5. Conclusions and Policy Implication

Migration with its concomitant remittance has diverse socio-economic impacts: increasing better opportunities for the migrant, improving the livelihood of sending households and contributing economic growth and has emerged as an important policy issue in developing countries. Ethiopia, being one of the highest African diaspora populations, is challenged by different migration patterns and dynamics, which have significant political and socio-economic ramifications for the country and undoubtedly affects the government's sustainable development and poverty reduction programs. Ethiopia, as in any other resource poor developing countries, is constrained by foreign exchange availability to finance the increasing demand for imports associated with domestic investment requirements. Remittances constitute the larger part of foreign exchange earnings sometimes larger than foreign direct investments and export revenues. Another transmission channel is through increasing income where an inflow of remittances impacts various living standards and human capital outcomes.

The objective of this study was to see the macroeconomic impact of inflows of international migrant remittances and the livelihood consequences of these remittances on the welfare of households and on poverty reduction. A simple vector error correction model was adopted to describe the macroeconomic impact of remittance shock on the Ethiopian economy. Furthermore, a poverty profile and binary outcome model were used to see the consequences of remittances on the welfare of households.

The result, using vector error correction model provides us some surprising results. It helped us know that while remittance shocks positively affect macroeconomic variables, the effect remained to be volatile in the very first periods after the shock. However, the impacts tend to sustain in the years after the fifth period. We also analytically saw that through the positive (but inelastic) relationship between growth and poverty, private remittance inflows have an important implication on poverty in Ethiopia.

The microeconomic approach has also revealed similar evidence. It was found that, using poverty profile and binary outcome models, international remittances significantly reduced the poverty incidence among the urban households in Ethiopia. We found that women are more likely to use remittance more effectively than their male counterparts. Thus the policy implication of these findings is that policy makers in Ethiopia should encourage diaspora citizens to increase remittance inflow via different incentive packages. The gender difference on the effectiveness of international remittance also implies Ethiopians in the diaspora sending remittance to their households should channel more of the remittance via female members of their households if their objective is to reduce poverty in their households. Further, the banking system in Ethiopia needs to minimize the transaction costs to channel the remittance via the legal channel to reduce urban poverty.

6. Bibliography

Abye Tasse (2008). Migration and the Ethiopian Diaspora, Addis Ababa University Addis Ababa

Adamnesh Atnafu (2008). Facets of International out Migration and Return: The case of Ethiopia, Addis Ababa University, Addis Ababa

Adamnesh Atnafu (2006). Aspects of Ethiopian Return Migration, Institute of Regional and Local Development Studies, Addis Ababa University, Addis Ababa

Agnarson L. (2006). The Integration of Ethiopian emigrants in Sweden, Stockholm University, Sweden

Alain de Janvry and Elisabeth Sadoulet (1999). Growth, Poverty, and Inequality in Latin America: A Causal Analysis, 1970 – 94, University of California at Berkeley, February 4, 1999

Amin, Mohammed and Aaditya Mattoo (2007). Migration from Zambia: Ensuring Temporariness through Cooperation, World Bank Working Paper Series 4145, 2007, Washington DC

Anyanwu, J and Erhijakpor, A.(2009). Do International Remittances Affect Poverty in Africa? www.afdb.org/.../30754258-EN-3.1.4-ANYANWU-DO-INTERNATIONAL-REMITTANCES-AFFECT-POVERTY-IN-AFRICA

Barten, A. P. (1969). Maximum likelihood estimation of a complete system of demand equations, European Economic Review, 1, Katholieke Universiteit te Leuven, Belgium

Batheseba H. (2007). Enabling Diaspora Engagement in Africa, Ottawa, Canada

Berg, A., Hussain,M., Aiyar, S., Roache, S., Mirzoev, T., and Mahone, A. (2006). The Macroeconomics of Managing Increased Aid Inflows: Experiences of Low-Income Countries and Policy Implications, Draft for WIDER Conference on Aid, IMF

Bigsten, A. Abebe Shimeles and Bereket Kebede (2005). Poverty Income Distribution and Labor Markets in Ethiopia. NORDISKA AFRICAINSTITUTET

Bigsten A., Bereket Kebede, Abebe Shimeles and Mekonnen Tadesse (2002b). Poverty and Welfare in Ethiopia: Profile and Determinants. Proceedings of the Fifth Annual Conference on the Ethiopian Economy. Edited by Bereket Kebede and Mekonnen Tadesse. December 1996. Addis Ababa.

Coudouel, A., Hentschel, Jesko S. and Wodon, Quentin T. (2002). Poverty Analysis. World Bank, PovertyNet

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

Duclos Jean-Yves and Araar A. (2006). Poverty and Equity: Measurement, Policy and Estimation with DAD, International Development Research Center

Emerta A.(2009) The Empirics of Growth, Poverty and Inequality in Sub-Saharan Africa, Ethiopian Economic Policy Research Institute, Working Paper No. 1/2009.

Federal Democratic Republic of Ethiopia Ministry of Finance and Economic Development (MoFED), various publications

Federal Ministry of Labor and Social Affairs (1998). Private Employment Agency Proclamation, Proclamation No 104/1998, Negarit Gazetta, 1998

Giuliano, P., and Ruiz-Arranz, M. (2005). Remittances, Financial Development, and Growth, Research Department, IMF Working Paper, WP/05/234

Gupta, S., C. Pattillo, and S. Wagh (2007). Impact of Remittances on Poverty and Financial Development in Sub-Saharan Africa, IMF Working Paper, WP/07/38. Hausman, J. A. (1978), Specification Tests in Econometrics, Econometrica, 46, 1251–1271

Hansen, H., and Headey, D.(2009). The Short-Run Macroeconomic Impact of Foreign Aid to Small States: An Agnostic Time Series Analysis, Development Strategy and Governance Division, IFPRI Discussion Paper 00863

International Labor Organization (2006). Multilateral Framework on Labor Migration Non-binding principles and guidelines for a rights-based approach to labor migration, International Labor Office, Geneva, 2006

International Migration Organization (2005). World Migration Report 2005: Costs and Benefits of International Migration, 2005.

International Organization on Migration (2008). World Migration Report 2008: Managing Labor Mobility in the Evolving Global Economy, Geneva, 2008.

IOM (2008). Migration and Development: Ethiopia retrieved from http://www.iom.int/jahia/pid/378

Jongwanich, J. (2007). Workers' Remittances, Economic Growth and Poverty in Developing Asia and the Pacific Countries, UNESCAP Working Paper, WP/07/01

Kokpari, J (2000). Globalization and Migration in Africa, African Sociological Review 4(2), pp 72-92

Mahesh Kumar Subedi (2009). The Impact of Labor Migration and Remittances on Household Income and Welfare in Nepal. Pacific Conference for Development Economics Saturday, March, 2009. San Francisco State University

Marcin Sasin And David Mckenzie (2007). Migration, Poverty and Human Capital Migration Operational Vehicle, Operational Note 1, The World Bank, January, 2007

National Bank of Ethiopia (NBE). Various publications

Peter Quartey (2006). The Impact of Migrant Remittances on Household Welfare in Ghana. AERC Research Paper 158 African Economic Research Consortium, Nairobi August 2006

Portes, A (1996). The New Second Generation, New York

Ravallion,M. (1994). How robust is poverty profile. World Bank Economic Review, V.5

Ravallion, M. (1996). Issues in Measuring and Modeling Poverty. The World Bank, Policy Research Department. Poverty and Human Resource Division

Siliji A. (2001). Globalization and Migration, unpublished draft work

Tassew Woldehanna, Hoddinot, J. and Darcon, S. (2008). Poverty and Inequality in Ethiopia: 1995/96-2004/05. May, 2008. Addis Ababa University, International Food Policy Institute and University of Oxford

Teferi Mequaninte and Bruk Asmelash (2009). Remittance Inflows and Country Experience: The Practice and the Potential for Inprovement. Proceedings of the Sixth International Conference on the Ethiopian Economy, Volume I, Ethiopian Economics Association.

Thorbecke, E. (2005). Multi-dimensional Poverty: Conceptual and Measurement Issues Cornell University, UNDP International Poverty Centre, Brasilia

Tassew Woldehanna, Hoddinot, J. and Darcon, S. (2008). Poverty and Inequality in Ethiopia: 1995/96-2004/05. May, 2008. Addis Ababa University, International Food Policy Institute and University of Oxford

United Nations (2006). Trends in Total Migrant Total Migrant Stock: the 2005 Revision. CD-ROM Documentation, Department of Economic and Social Affairs Population Division

Wodon, Q.(1999). Growth, Poverty, and Inequality: A Regional Panel for Bangladesh, The World Bank

World Bank (2006). The international Migration Agenda and the World Bank: Managing Risks and Enhancing Benefits, The World Bank, September, 2004

World Bank (2005). World Development Report: A Better Investment Climate for Every One, The World Bank, 2005

7. Annexes

Annex 1: Vector Auto regression Estimates (Long-run relationship)

Vector Auto regression Estimates
Sample (adjusted): 1972 2009
Included observations: 38 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	LRW	LRD	LRY	LRM
LRW(-1)	0.500138	0.014596	0.009763	0.025894
	(0.05576)	(0.01291)	(0.01260)	(0.03943)
	[8.96897]	[1.13073]	[0.77470]	[0.65668]
LRD(-1)	4.865985	0.484273	-0.307719	-0.883188
	(1.55814)	(0.36070)	(0.35213)	(1.10181)
	[3.12294]	[1.34258]	[-0.87387]	[-0.80158]
LRY(-1)	-4.093437	0.492160	1.393743	1.674266
	(1.83683)	(0.42522)	(0.41511)	(1.29887)
	[-2.22853]	[1.15743]	[3.35750]	[1.28901]
LRM(-1)	0.869810	-0.054676	-0.071927	0.489450

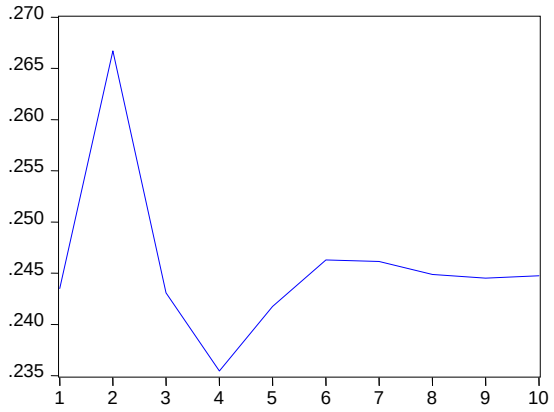
	(0.39363)	(0.09112)	(0.08896)	(0.27835)
	[2.20972]	[-0.60002]	[-0.80855]	[1.75842]
C	-11.27437	0.551268	-0.387843	-4.346732
	(3.29613)	(0.76304)	(0.74491)	(2.33078)
	[-3.42049]	[0.72246]	[-0.52066]	[-1.86492]
R-squared	0.974022	0.974097	0.984213	0.960790
Adj. R-squared	0.970873	0.970958	0.982300	0.956037
Sum sq. resids	2.521710	0.135138	0.128792	1.260928
S.E. equation	0.276433	0.063993	0.062472	0.195474
F-statistic	309.3286	310.2496	514.3423	202.1547
Log likelihood	-2.379331	53.22213	54.13602	10.78936
Akaike AIC	0.388386	-2.538007	-2.586106	-0.304703
Schwarz SC	0.603858	-2.322535	-2.370635	-0.089231
Mean dependent	6.678315	10.54086	10.77488	8.745371
S.D. dependent	1.619740	0.375505	0.469568	0.932277

Determinant resid covariance (dof adj.)	3.23E-09
Determinant resid covariance	1.84E-09
Log likelihood	166.4996
Akaike information criterion	-7.710503
Schwarz criterion	-6.848616

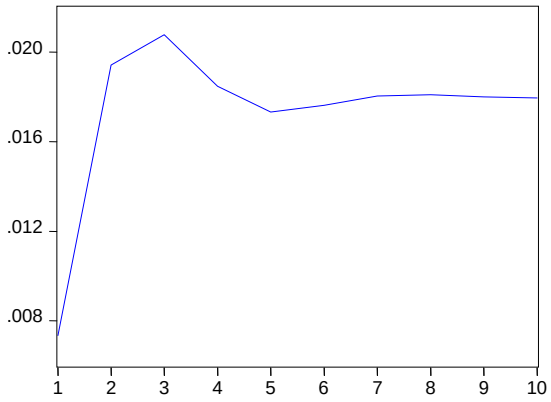
Annex 2: Impulse Response Function

Response to Cholesky One S.D. Innovations

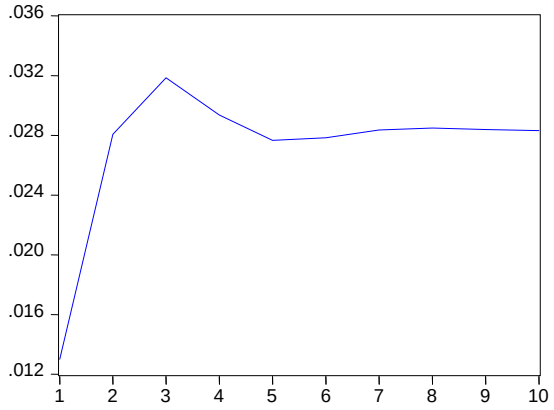
Response of LRW to LRW



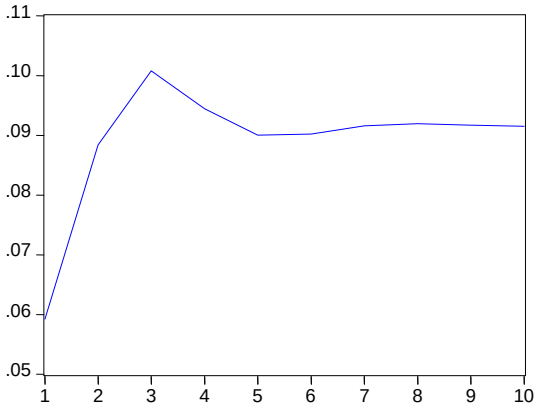
Response of LRD to LRW



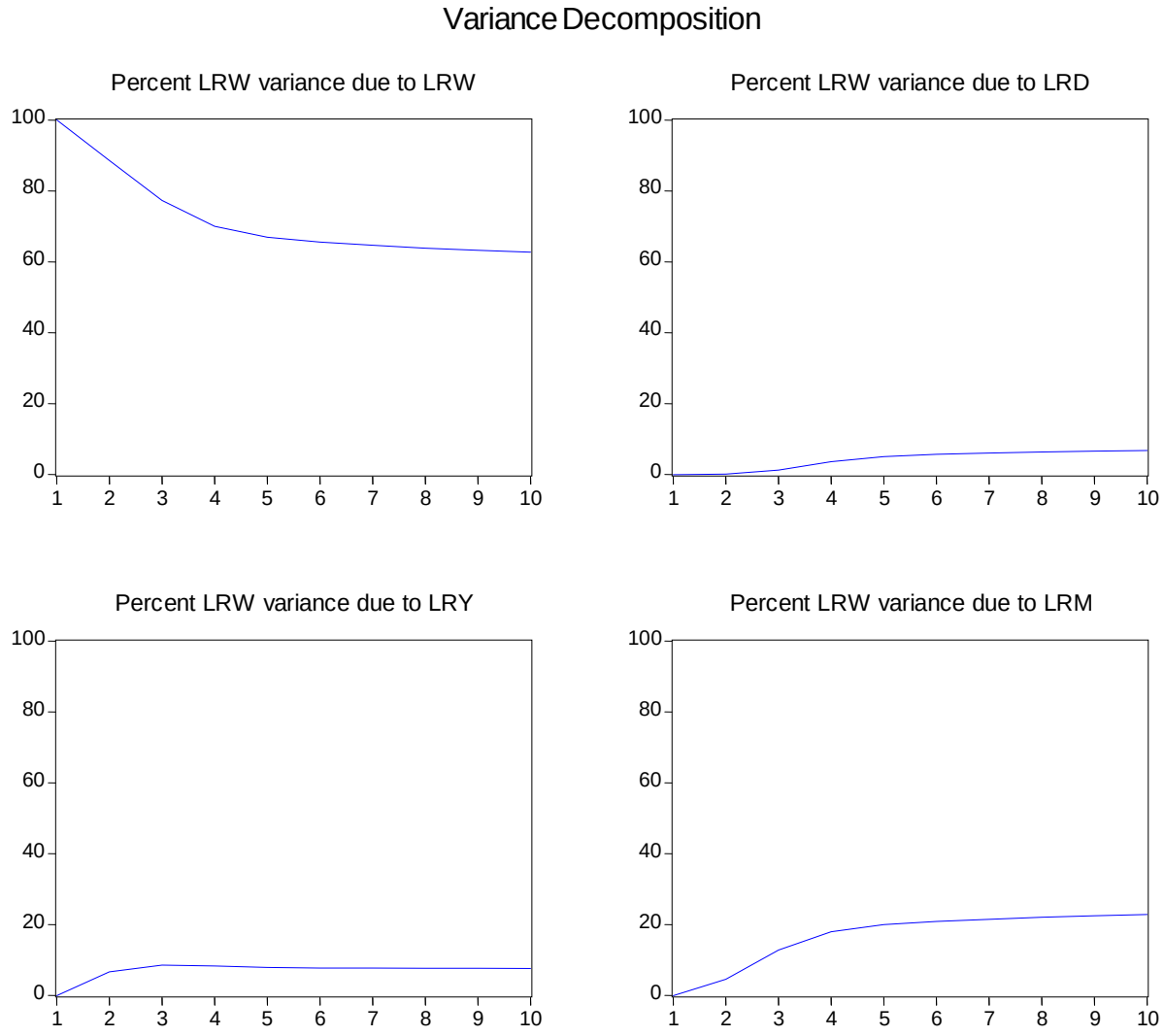
Response of LRY to LRW



Response of LRM to LRW



Annex 3: Variance Decomposition



Annex 4: The marginal effects logistic regression

y = Pr (pov) (predict)

= .34138792

Variable	dy/dx	Std. Err	Z	P>|z|	[95 % CI]		X
Remittances*	-0.255	0.048	-5.320	0.000	-0.349	-0.161	0.120
Age- HH head	-0.007	0.007	-0.960	0.337	-0.021	0.007	51.421
(Age-HH head)^2	0.000	0.000	0.800	0.426	0.000	0.000	2827.470
HH size	0.079	0.021	3.670	0.000	0.037	0.121	6.728
(HH size)^2	-0.003	0.001	-2.170	0.030	-0.006	0.000	53.941
Literacy*	-0.081	0.050	-1.610	0.107	-0.180	0.018	0.074
Primary Educ*	-0.155	0.033	-4.640	0.000	-0.221	-0.090	0.273
Secon Educ*	-0.291	0.030	-9.590	0.000	-0.351	-0.232	0.205
Tech-Voc*	-0.292	0.048	-6.060	0.000	-0.386	-0.197	0.016
University*	-0.356	0.023	15.410	0.000	-0.402	-0.311	0.099
Male*	-0.026	0.036	-0.730	0.465	-0.096	0.044	0.575
Working*	0.025	0.034	0.730	0.468	-0.042	0.091	0.576
Rem-Gender*	0.265	0.119	2.230	0.026	0.032	0.499	0.067
Remittance(Dom)	0.000	0.000	-0.570	0.567	0.000	0.000	140.152

(*) dy/dx is for discrete change of dummy variable from 0 to 1