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THE IMPACT OF REMITTANCE ON ECONOMIC GROWTH AND POVERTY REDUCTION IN ETHIOPIA

BY

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The impact of remittance On Economic growth and poverty reduction in Ethiopia

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Declaration

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

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Dedication: -This work is dedicated to the entire for my family and especially my mother and lovely girlfriend who is living in Abuja   for their unflinching support, love and investing into my education.

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List of Acronyms

ADF	augmented dickey fuller
ARDL	autoregressive distributive lag model
AIC	Akanke information criteria
MTOS	money transmission of organization
REMIT	Remittance
RGDP	Real growth domestic product
FGT	Foster-Greere-Thorbecke
FDI	Foreign direct investment
GDP	Gross domestic product
IMF	International monetary fund
IOM	International organization for money transfer
ILO	International labor organization
NBE	National bank of Ethiopia
PPP	purchasing power parity
WB	World Bank
SBC	Schwartz-Bayesian criteria
BPMS	5th edition IMF balance payment of manual
SSA	Sub Sahara African countries
UNDP	united nation's development program
UNCTAD	united nation's conference on trade and development
WDI	world development indicator

CUSUM	cumulative sum
CSUMSQ	cumulative sum of square
MOFED	ministry of finance and economic development
CSA	central statistics agency
DW	Durbin Watson
CHSQ	chi-square

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Abstract

This study examines the impact migrant remittances on economic growth and poverty reduction in Ethiopia using time series data over the period 1980-2011. Employing modern time series econometric techniques such as unit root tests, bound test co-integration approach and error correction techniques within an *ARDL* framework which yields more robust estimates. The results suggest that, remittances do have a significant impact on Economic growth by increasing real private investment and fixed capital accumulation which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households by improving human capital . Finding merge from this study that have a strong and statistically significant long run impact on poverty reduction, through the direct increase in the incomes of the poor, thus smoothening household consumption and easing capital constraints.

The study suggested policies which aimed at sustained increases in remittances through the formal channel where significant amounts can be recorded and improve the impacts particularly to the poor. Furthermore, transaction costs in sending remittances should be lowered and also barriers to official remittance channels should be removed. For example, capital requirements on remittance services should be lowered and formal financial intermediaries should be widened by allowing domestic banks to operate overseas. Finally, it is strongly recommended that, the government could develop appropriate training or education programs to assist returning migrants or remittance receipts in making effective investment decision. In addition, the appropriate infrastructure should be developed to generate favorable investment climate and to complement investments out of remittance.

CHAPTER ONE

Introduction

1.1Backgrounds

Migrants have a lot to put forward remittance to their homelands, from knowledge to money. It is often the latter has an easier way finding its way back to percolate through the borders of nations, as the former requires the physical mobility of individuals. Diffusing remittance money has remained one important stream of revenue for the governments and peoples of developing countries. Over 192 million migrants across the world actively remit money back to their country of origin. Their net remittances amounted to be 414 billion dollars, out of which 316 billion dollars went to developing countries in 2010. Africa's share from total remittances flows to developing countries ranges between 40 billion dollars and 50 billion dollars annually originating from 30 million adults working in the developed world (World Bank 2010). It is worth noting that the World Bank estimate is based on formal transfers and hence is bound to underestimate the actual size of remittances.

At the other end of the spectrum reside developing countries, which standardize remittances as an important source of national revenue. The largest emergent developing countries, China and India, received a total of 106 billion dollars of remittances in 2010. The sources of their remittances were from migrant communities, mainly in the United States and Europe. Mexico, a North American country received 22.6 billion dollars in remittances during the same time .As it stands the share of Africa is marginal, the largest nation of the continent was Nigeria received 10 billion dollar of remittance in 2010. Ethiopia received remittance 387 million dollar in the same year (World Bank Group 2010).

Explosion of growth in remittance over the 1990's especially in developing countries has inspired a stream of literatures focusing on the impact of remittance on the dynamics of economic growth and poverty alleviation of the recipient country. Therefore, the relationship between the three variables has motivated a voluminous empirical literature was center of attention on both industrial and developing countries [Calaro (2008); Jongwanich (2007); Stark

and Lucas (1988); Taylor (1992); Faini (2002); Gupta et al. (2009)].Most studies were conducted both micro and macro level on the impact of remittances either directly or indirectlyon growth and developmentAmjad , 1986; Nishat and Bilgrami, 1991). However,low status contract to remittance within local policy frameworks, the findings of the recent report by National Bank of Ethiopia (NBE, 2011) were astonishing. The amount of remittance sent to the nation by its Diaspora community was for the first time, exceeded the export revenues obtained during the same period. Hence relationship between remittance ,poverty and economic growth has been a topical issue for several decades

Therefore the studies investigates that effects of remittances on economy of Ethiopia in terms of aggregate fixed capital accumulation, private investment which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households by improving human capital and poverty alleviation by improving income inequality, smoothing consumption . Abdul and Muhammad (2008) finds that remittance inflow is major variable affecting the poverty levels both through change in income and consumption level and as well as through increase in capital stockDuring the current decade since the event of 2009/11 the inflow of remittances to Ethiopia has increased sharply from 33 million US$ 2002 to 524 million US$ in 2012. This massive inflow of remittances contributes by increasing in human and physical capital accumulation , significant impact on real private investment, stabilizing income inequality and reducing poverty.

1.2 Statement of the problem

In the developing world international migration is often caused by individuals seeking better economic opportunities for themselves and their families. Once these migrants find employment abroad, they tend to remit or send a sizeable portion of their earnings to families back home. Despite the plethora of studies on the relationship between remittance, economic growth and poverty, the empirical evidence is not clear for country groups. Following the criticisms in recent studies of the traditional assumption of the insignificant influence of remittance on growth, poverty alleviation and income inequality. Abduhal and Mohamed (2008) Examined that the significant impact of remittance on economic growth and poverty.

Migrants' flows from Sub-Saharan Africa are thus occurring within a context of extreme poverty, conflict and the HIV/AIDs pandemic, all of which impact migration dynamics (Adepoju, 2008). Similarly, since 1970s Ethiopia faces complex challenges of food insecurity, overpopulation, drought, political instability, and ethnic conflict. During this period, emphasis was given to activities such as establishing modern administration, organizing police and military forces, development of social and economic infrastructure, and development of transport and communication facilities. Due to lack of absorptive capacity and hence migrant remittance from abroad was very few in addition to these issues; Ethiopia faces large challenges with respect to migration flows (Bariagaber, 1999). On the other hand from the 1980s Ethiopia became the largest refugee-producing area in the world. Ethiopia being the largest contributor to the migrant flows to developed countries has important applications.

Remittances to Ethiopia from the international migrants provide an integral source of income for families to carry on themselves through external shocks and meet their basic needs. The United Nations Development Programme (UNDP) estimated the total inflow of remittances for Ethiopia in 2007 was 359 million US dollar. The average value of remittances received per person was 4 US dollar .However, the relationship between migrant remittances and economic growth is no less controversial than the literatures discussed above .Many previous studies tries to see, Brown and Jione (2007) conducted that the impact of remittance on poverty is positive and mixed in inequality. Whereas Paolo Giulian and RuizeArrand(2005) examine that relationship between remittance and economic growth ,they conducted that remittances ease credit constraints that don't have well financial markets ,they play important role in providing start-up capital for productive investments and finally, they concluded that remittance drives growth in less important the more financial system. Vargas-Silva et al. (2009) examined that the impact of remittance on poverty and economic growth using panel data. In their specification, GDP growth rate and poverty gap ratio are expressed as function of remittance .They found that the impact of remittance on economic growth is positive whereas on poverty is negative. Jongwanich (2007) examined that the impact of workers remittance on growth and poverty in developing Asian-Pacific countries using penal time series data from 1993_200. He found that the remittance have a significant impact on poverty reduction, but insignificant impact on the in economic growth.

Remittances are mainly used as risk-reducing instruments and as insurance against external shocks (Aredo, 2005). Bigsten, Kebede and Shimeles (2005) investigated income dynamics in Ethiopia for the period 1994-1997 and concluded that households in Ethiopia relied heavily on remittances in that period. In 1997 remittances were the primary source of income for 22 percent of the households in the sample in Ethiopia. Moreover ,the mean share of household income provided by the remittances was 25 percent in that year. For the poorest quintile, remittances constituted almost half of the household's total income.

Most studies uses micro (household level) data to studies on influence of remittance, they examine influence of remittance on growth, income inequality, poverty alleviation is mixed .However, these studies is new as Ethiopian context in which it uses time series data in a period 1980_2011, it examine that the impact of remittance on poverty and economic growth and also result investigate there is long run and /or short run relationship between them.

1.3 Objective of the study

The objective of this study is to examine the impact of remittance on economic growth and poverty in Ethiopia. More specifically, the study tries to

- Examine there may be whether existence of long run and /or short run relationship between economic growth and remittance.
- Examine whether remittance reduce poverty.
- See performance and trends of remittance in Ethiopian economy.
- Finally, to assess what sort of government policy can help country promote growth and reduce poverty.

1.4 Significance of the study

Migrants those send remittance those lives especially USA,UK and UA may also consider different preconditions like economic performance before deciding where to invest their resources or which option they will use to reduce poverty gap. This study, therefore contributes significantly to the literature by providing new and robust evidence on remittance-growth   relationship and poverty alleviation in Ethiopia under consideration using

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dynamic ARDL model. Some policy implications for possible considerations by the various concerned bodies based on the results obtained and its contribution to other interested people to undertake further study on the issue is also indispensible.

SCH OLFGR FA DUR ODTE

This study is mainly devoted to the impact of remittance on poverty and economic growth. Performance of Ethiopian economy through the determinants of poverty and growth are highlighted in a period 1980_2011.

1.6 Organization of the Study

The study is organized into six chapters. Chapter one deals with the introductory part of the topic whereas chapter 2 is devoted to both the theoretical and empirical review on the impact of the remittance on poverty and economic growth. The performance and trend of remittance in Ethiopian economy is explained under chapter three. The data and methodology to be employed in the thesis are deal with under chapter four and the econometric results and discussions given in chapter five. Finally, the conclusions and policy recommendations were drawn in chapter six, depending on the findings of the study.

CHAPTER TWO

Literature review

2.1 Theoretical review

2.1.1 Definitions and Conceptual frame work on remittance

As World Bank (2006) defined the remittance as broadly defined here as cross-border person-to Person payments of relatively low value. In order to compile and report remittances data, institutions adopt specific definitions of what constitutes a remittances transfer. World Bank Migration and Remittances Fact book (2010):- defined as remittances as the sum of workers' remittances, compensation of employees, and migrants' transfers. While these are three different series, this publication suggests that compliers of data are not good at distinguishing between these series and tend to mix them. The concepts of remittance had been linked to the theory of migrations. Its definition however can be linked to its motives, effects, uses, kind of transfer and the channel of funds transfer. BerhaneTewolde (2005) remittance as monetary and non-monetary items that migrants earn while working abroad and sent back to their families living in their homeland. Ratha (2003) migrant's capital transfers, which are assets that a migrant brings into or takes out of the country. (IOM ,2006) broadly defined remittances as the financial flows associated with migration, in other words, personal cash transfers from a migrant worker or immigrant to a relative in the country of origin. (ILO 2000) the portion of migrant workers' earnings sent back from the country of employment to the country of origin.

Actually, remittances defined as Workers' remittances: Current private transfers from migrant workers who are considered Residents of the host country (i.e. non-residents of the home economy) to recipients in the workers' country of origin. If the migrants live in the host country for one year or longer, they are considered residents, regardless of their immigration status. Compensation of employees: Earnings by resident individuals (i.e. Residents of the home economy) for work performed in another economy (i.e. Working in host) and paid for by

residents of this other economy. If the migrants have lived in the host country for less than one year, their entire income in the host country is classified as compensation of employees.

Migrants' transfers: The net worth of migrants' assets that are transferred from one country to another at the time of migration (for a period of at least one year). This includes the flow of goods and changes in financial items that occur with migration (to or from the migrant as resident to the same person as non-resident.

Channels of Remittance Transfer are away of remittance flow from abroad to home countries and it is categorized as the formal Channel:-Where transactions go through the formal financial system and are documented. e.g. through banks, MTOs, Post offices using traveler's cheques, telegraphic transfers, postal orders, account-to-account transfers etc .whereas the Informal Channel: - Transactions may or may not go through the formal channel, and documented for formal use, It refers to the transfer of funds outside the international or national legal foreign exchange transfer frame work e.g. Hawala, Hindu, source, world d evelopment indicators (2006).

Classical (1950s and 1960s) states that poor countries would move their economies towards rapid economic development and modernization. As we know for the concepts Migration leads to transfer of investment capital and accelerates the exposure of traditional communities to liberal, rational and democratic ideas, modern knowledge and education. From this point of view exactly Developing countries started to actively encourage emigration as it was considered instrumental to the promotion of national. The Seminal works of Lucas and Stark (1985) and Stark (1991) are notable exceptions. Lucas and Stark (1985) divide theories of remittances into three groups, i.e., Pure Altruism, Pure Self-interest and Tempered Altruism or Enlightened Self-interest.

In the Pure Altruism model, the migrant derives utility from the utility of the rest of her household in the country of origin. The utility of the household depends on its per capita consumption. The migrant's utility function depends on her own consumption and on the weighted utility of the rest of the household in the country of origin. The migrant chooses the level of remittances that maximizes her utility function. This model yields two testable

hypotheses, (1) remittances increase with the migrants wage level; and (2) remittances decrease with the level of income of the household (i.e. remittances to less well-off households would be higher). The impact of household size on the level of remittances can be either positive or negative depending on presence of economies or diseconomies of scale in consumption, the rate of decline in marginal utility of home consumption and whether the migrant has a preference for a subset of the household in the home country.

Pure Self-interest generates three motives for remittances. The first arises from the belief that if she takes care of the family a larger portion of the family wealth would be bequeathed to her. This motive predicts larger remittances, the larger the potential inheritance. The second motive is to build up assets at home such as land, houses and livestock, which would necessitate that family member act as an agent to purchase the assets and maintain them in good condition. The third motive may arise from intent to return home at a later stage which would require investment in fixed assets, in a business or in community projects if the migrant has political aspirations. The last objective illustrates the difficulty of separating altruistic and self-interest motives.

Neither of the two theories above is sufficient to explain the extent and variability of remittances. Thus Lucas and Stark developed a theory that views remittances as part of an inter-temporal, mutually beneficial contractual arrangement between the migrant and the household in the country of origin development. We can say that Migrants are seen as agent of change, innovation and investors

Early explanations of multinational production were based on Neoclassical theories of capital movement/flow and trade within the Heckscher-Ohlin framework. However, these theories were founded on the assumption of existence of perfect factor and goods markets and were therefore; unable to provide satisfactory explanation for the nature and pattern of remittance. Due to limitation of data, these theories presumed that remittance would not take place. Nevertheless, the presence of risks in migrating abroad from home country implies that there must be distinct advantages to send remittance in a particular host country. International migration can offer an effective means for poor people to escape poverty, while promoting economic growth and technological progress. Communities can be lifted out of poverty via

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remittance flows from the country's Diaspora. Also, when migrants are successful in business endeavors, the Diaspora can become involved in trade and capital flow networks that facilitate market access, investment, and technology transfer. However, migration can also be overwhelming to those left behind. Migrants can take with them critical skills, especially in the area of health. Further, the loss of household heads, innovators and social leaders can cause a broad array of costs, including to social cohesion.

2.1.2 Developmental Pessimistic Structuralize Theory:-The economists such as Almeida (1973), Lipton (1980), Rubenstein (1992), and Binford(2003) argue that the net effect of migration and remittances is only to sustain or even reinforce the problems of poverty rather than promoting growth / development. The position of this school is that migration aggravate the extraction of human capital which then leads to the development of passive, non-productive and remittance-dependent societies in developing countries. Besides the brain drain syndrome, the massive departure of active segment of the population causes a critical shortage of labor, depriving poor communities/countries of their most valuable workforce (Lipton, 1980; Rubenstein, 1992). Lipton (1980) further argues that because it is generally not the poorest who migrate the most, migrant remittances are very likely to increase inequality in labor-exporting communities.

Lipton (1980), Entzinger (1985) and Lewis (1986) still argue that there is a high tendency that remittances would be spent on conspicuous consumption and "consumptive" or non-productive investments such as acquisition of real estate and, for that matter, are rarely invested in productive enterprises. Besides weakening local economies and increasing dependency, increased consumption and land purchases by migrants were also reported to provoke inflationary pressures (Russell, 1992) and soaring land prices (Appleyard, 1989; Rubenstein, 1992). Also, in a socio-cultural respect, the effects of migration and remittances were increasingly seen as detrimental to the overall development of poor nations. Exposure to the wealth of migrants was assumed to contribute to a change in rural tastes (Lipton 1980) that would increase the demands for imported goods, which further reinforces the system for continuous dependency. The unending desire for remittances has often been linked with the loss of social solidarity which undermines the socio-cultural integrity of labor-exporting communities (Hayes, 1991). Again, Durand et al (1996) warned that remittances

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should be considered as 'deceptive' and 'risky', because they cannot be expected to be stable and permanent source of income . From this perspective, South-North migration was perceived as discouraging instead of encouraging the autonomous economic growth of migrant-sending countries. Such views conform to the historical structuralist model on holistic development that perceives international migration as one of the many reasons why low-income countries continue to depend on the global political-economic systems (see Massey et al, 1993)

2.1.3 Developmental-Remittance Pluralist Theory:- these school of theory is emerged as development list and neoclassical theories (the optimists) and structuralist theory (the pessimists) which regard the earlier entrenched positions as too static and deterministic to deal with the complex realities of the international remittance-development nexus. The pluralists, thus, provide a much more dynamic insight into understanding migration and development relationship, which connects the causes and consequences of migration more explicitly, and in which all possible positive and negative development responses are taken into account.

(Asmellash 2006) quoted that by describing the determinants of remittances, its uses and the effects on the recipient. The economic impact of remittance is likely to depend on the propensity of the recipient household to consume or invest. Where remittances is invested it would contribute to the wealth generation of the family and increase their income Abdul et al(2008) quoted that remittances boost growth in countries with less developed financial system as it provide an alternative way to finance investment and reduce liquidity constraints. Workers' remittances also play an important role in human capital investment in the recipient country through relaxing resource constraints.

International remittances also perform an important role in reducing the extent of inequality and poverty. Acosta et al (2007) argued that remittances have negative though relatively small inequality and poverty reducing effects. In present studies examines that remittance has significant impact on economic growth by reducing income inequalities and has also significant contribution in poverty alleviation by reducing saving –consumption gap in receipts ,those found in home countries ,increasing human capital by increasing school enrollments especially for children's of home countries which is also supported (ibid).

2.2 Theories of Motives for a Migrant to Remit

Theory of Pure Altruism:-states that migrants remit money simply because they care about the wellbeing of the family members by providing them with additional income not only this but also smoothing consumptions, closing gap of poverty, income poverty ,school enrollments' of primary and secondary increases which has significant contribution in increasing human capital .In a pure altruistic model ,remittances tend to increase at any time the income of the potential remitter increases, unless the potential remitter's income is very low, probably below subsistence level.

Theory of Self Interest: - A migrant would send money home to increase their Visibility. Hence eligible for inheritance, esteem or other resources in the community of origin. Migrants send remittances in order to reimburse the household for past expenditures such as schooling or the cost directly related to migration. In the case of pure self-interest, they remit in order to purchase durable goods and invest in housing, land or businesses at home. Then have some contribution for the growth and development of that con country, since from endogenous growth theory ingestion capital to home country boost economic growth.

2.3 Theoretical frame work on Growth measure

Economic growth: - generally described as a positive change in the level of production of goods and services by a country over a certain period of time. In other words, economic growth is the increase in the value of goods and services produced by an economy. It can also be referred to as the increase in the gross domestic product. It is a relatively straight forward measure of output and gives an idea of how well off a country is compared with competitors and past performance. It is a beacon that helps policy makers steer the economy towards key economic objectives. Finally, it is a measure of the wellbeing of a state; usually in real terms, all other things being equal (Enu: 2009)

Economic growth can be measured as the measurement of Growth from nominal perspective, Growth defined from real magnitudes and Growth measured in terms of per capita values.

Solow (1956) hypothesized that in his intensive model

f (k)=F(K/AL,1)

Whereas A is technological progress, L is effective labor =>AL is referred to as effective labor and technological progress

The feature of these production function output change if only the inputs into the function is change

$L'(t) = nL(t)$

$A'(t) = gA(t)$,

Capital depreciation rate.

$K'(t) = sy(t) - \delta k(t)$ whereas n and g are exogenous meaning that they have only level effect on the growth of economy   It is assumed that the sum n, g and δ must be positive (David Roomer, 1996)

The above Solow model can be specified as follows

By using, output (Y) is assumed to be factors of production function, capital (K) and labor (L) and remittances (REM). In the context of developed   countries, human capital and gross fixed capital formation is a potential determinant of growth which is not accounted for by other independent variables.

Y = f (K, L, REM)

Furthermore, we can express change in capital (ΔK) as investment (I).

It is assumed that remittance which sent from abroad affect the efficiency of productive units of capital and labor which may be significantly or not. Her , we used real private investments (I_p) then it is assumed that labor input is can be proxies by human capital which is affected by means of remittance in flow, in this studies it is measured by education(school enrollment) ,which is measured by both primary and secondary school enrollments. Only the remittance which is transfer from developed countries is considered. Because, migrant remittance which is proxy for remittance, play a significant role improving labor force. However, Solow (1956) simplified that

the inputs and the rate of saving, technological progress, depreciation, population growth and technological progress are constant. But, augmented Solow model by adding human capital which consists of abilities, skills and knowledge of particular workers .This model the same to Solow mode by assuming constant returns to scale, but it is deferent from Solow model in implying the mordent change in the resources devoted to physical and human capital may leads to large changes in output per worker. As we know that remittances have a significant contributions to increase human capital in home countries especially by encouraging school enrollments. On the other hand endogenous growth model states that saving and investment has permanent impact on the growth of the economy. Remittances receives from abroad has critical impact on closing saving-investment gap of receipts. (ibid)

Keynesian growth theory is mainly connected with Roy. F. Harrods (1939) and EvseyDomar (1946). These neo-Keynesian economists tried independently to dynamites Keynesian theory. The theory is based on the active role of money, the principals of effective demand and on the saving function respectively, the transition of saving to investments and multiplication effect. In his scientific work Harrods (1939) started from the accelerator principle and Domar (1946) started from the multiplication effect. Despite the different approaches, they came to the same conclusion that the rate of growth of output is determined jointly by the national savings ratio and national capital output ratio. In economic literature their theory appears as Harrod-Domar Keynesian theory of growth or simply, Harrod-Domar growth model (Anyanwu and Oikhenan: 1995)

2.4 Theoretical frame work on poverty measure.

Shroff and college' 09. (2009) hypothesized that the impacts of remittance on poverty heavily on the demographic group within the society that is receiving the end of transfer.

The FGT poverty measure is defined as:

$$FGT_\alpha = \, ^A_{\text{DJT}}SC \text{ H OIFGRC} \text{------------------------ (1)}$$

Where N=Total number of households, z is the poverty line, H is the total number of

Households' living under the poverty line and yi represents the income of a family below the poverty line. A modified Foster-Greer-Thornback (hereafter FGT) poverty index (1984).Was used to analyze the poverty implications of remittances. Hupei and Ravalli on (1991) perform an income-source poverty decomposition for Indonesia. More commonly one finds in recent literature that sect oral decompositions of poverty are peroxide by undertaking a standard poverty decomposition for groups defined by primary sect oral source of income, or other characteristics such as household size, group or location. This proxy method is difficult to justify where a typical farm household's income is diversified across a variety of activities, as is clearly the case in rural Ethiopia .

FGT follow to measure poverty as follows

Let Yd= (Y_{d1}, Yd2, ---, Ydi), household incomes increasing order,

Z>o, predetermined poverty line

So that FGT poverty measured as follows

$$P\,(Y_d;Z)=1/z^2 \; ^B_{\text{DJT}}EI$$

Where n is the total number of households, q = q (Yd; z) is the number of poor households, and gi= z – Ydi is the income shortfall (the gap between the household's income and the poverty line; Sundrum) of the ith (poor) household. This index satisfies the two axioms formulated by Sen. (1976, 1979) for poverty measures to satisfy that: (1) a reduction in the income of a poor

household, ceteris paribus, increases the poverty measure (monotonicity); and (2) a pure transfer of income away from a poor household increases the poverty measure (the transfer axiom). FGT present a decomposition of this poverty measure by population subgroup, and Reardon and Taylor (1996) decompose the FGT poverty coefficient by income source. To decompose $P(Y_d; z)$ by determinants of income, we substitute equation [1] for Ydi in the FGT poverty index. These yields

$$P(Y_d;Z)=1/nz^2 \quad {}^{B}_{DUT}SNH \quad {}^{M}_{MUT}O\&FI$$

To know the small change remittance, e, on poverty, by differentiating FGT poverty index with respects to e

$$D(p(Y_d;z)/de=1/N(\quad {}^{AK}_{DUT}PSNH\ OFPH\ WH \quad {}_{AY}SNH\ OFVFLQ \quad {}_{A)}Sz\text{-}yi)\varepsilon airF\frac{T}{.e}$$

In the above equation, Ho denotes the number of households in poverty both

Before and after the change in income, H- (H+) denotes the number of households that Leave (enter) poverty as a result of the remittance change. For a positive change in an income source, such as an increase in remittances, the last term in the above equation drops out, and the poverty effect is negative or zero(if no impoverished households receive income from the income source) (Ibid).

From above FGT_α poverty measurement we can develop the three commonly poverty measurements as follows.

➡ If $\alpha=0$,then $P0=q/n$: headcount ratio or incidence of poverty: % of poor in the population
➡ if $\alpha=1$, po=1/n $\quad {}^{B}_{DUT}SNH\ OF$ poverty gap index or depth of poverty

${}^{B}_{DUT}(z\ H\ OF\ c$ Total income deficit of the poor = cost to eliminate poverty with perfect targeting, nz= cost of eliminating poverty without targeting

$\dfrac{leartlti \quad ontudt\ acsgirt \quad 1}{g,learelti \quad ontudt\ acsgirt \quad 1}$ Hence $1-P1$= Gain from targeting.

(P1 does not satisfy the transfer axiom. It does not measure inequality among the poor.)

➡ If $\alpha=2$, then $p2=1/n$ $\quad {}^{B}_{TUT}SSNH\ OFWRNEI$ severity of poverty index. (P2 satisfies the monotonicity and transfers axioms. It measures inequality among the poor. But interpretation problematic: $2?

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Note that: International comparisons (World Bank: World Development Indicators): z= 1 PPP-adjusted$/day per capita (also 2PPP$/day).PPP income = income/PPP exchange rate

PPP exchange rate = number of LCU to buy the same amount of quality adjusted goods and services as 1$ in the United States. Useful for international comparisons.

BCH N&GMPMLWV VMDRPWDTPRC

There have been a few studies on the role of remittance in the long-term growth of national economies and poverty alleviation. But, there is no consistent evidence exists for significant impacts of remittance on economic growth and poverty reduction weather in positive or negative direction. Results and evidence about the effect of migrant remittance on economic growth and poverty reduction differ by country (region), analytical method employed, and categorization of channels of remittances flow . There are various studies regarding the growth effects and poverty reduction effects of remittances flow based on the experiences of a set of developing countries.

Jongwanich (2007) examines the impact of workers' remittances on growth and poverty in Asia-Pacific developing countries. The empirical evidence shows remittances have a significant impact on poverty reduction and trivial impact on growth. Catrinescu et al (2006) explored that remittances exert a weakly positive impact on long term macroeconomic growth. Moreover the study also supports the idea that development impact of remittances enhances in the Macro level. Paolo Giuliano and Ruiz-Arranz (2005) use cross country data on remittances for 73 developing countries from 1975-2002 (using 5- year averages) They argue that remittances ease credit constraints in developing countries, that do not have well-functioning financial markets, thus playing an important role in providing the initial start-up capital for productive investments. They conclude that remittance driven growth is less important the more developed financial system.

Berhe (2011) realizedthat as one of critical issue of remittance is change in distributions of income in home country which in turn poverty and income inequality based on receiver. As we know that migration is so expensive even if poor will have more demand to send their members abroad, since absence of less likely to realize not have well-functioning insurance and credit

markets .Results only better of peoples will afford to send migrants member to abroad. But, through the time past migrants also help new migrants to find jobs and settle easily. This will increase a number of migrants to abroad and will have a great deal of chance to increase the remittance in home country(ibid) .Though there are some evidences that remittances decrease poverty and increase inequality, thus came up with economic growth, the result in generally mixed and varies a lot. Most of the studies are country specific and concentrate in Latin America. There are also few studies in Africa. Cross-country studies are also emerging recently Gustafson and Mekonnen. (1993) studied the effect of remittances on poverty using data, from Lesotho (2011). They treated remittances as exogenous additions to income and compared poverty and they argued that remittances decreased poverty significantly. The effect was more pronounced for poverty gap and poverty severity measures. They used different poverty lines and the head count ratio on average decreased by a quarter while the poverty gap and squared poverty gap ratio fell by more than half. But, in these studies in poverty model uses head count ratio using time series data not whether cross-sectional or penal date.

Adams (1989) studied the impact of international remittances on inequality in rural Egypt. He first estimated income for those households who do not have migrant member abroad. The estimated equation was then used to calculate the counterfactual income for remittance receiving households in the absence of migration and remittance. Similarly, actual income (including remittances) was estimated for the whole sample where having a migrant member is included as a regressor. Then, inequality measures were compared for the two scenarios and it was found that remittances increase inequality because they were received by the upper income villagers. The Gini coefficient rose from .20 to .24 for per capita income and from .24 to .27 for household income. His contribution was pioneering in terms of estimating the counterfactual income without remittances. But, it has a weakness namely that it did not take in to account the issue of selection in to migration which may bias the result. Using similar approach, Rodriguez (1998) found that remittances increase inequality significantly in Philippines as represented by a rise of the Gini coefficient from .29 to .31. He found larger effect when remittances are considered as a substitute for home income instead of exogenous additions to income. In a similar fashion, Brown and Jimenez (2008) found that remittances decreased poverty in Fiji and Tonga while the effect on inequality is negligible. In Fiji where 43% of the households receive international

remittance the head count and the poverty gap ratios respectively fell from .49 to .34 and from .17 to.15. In Tonga where the remittance receivers account for 90% of the sample, the head count and poverty gap ratios dropped from .62 to .32 and from .27 to .12 respectively. Interestingly, they found that the effect on poverty is smaller in the case where remittances are considered as exogenous additions to households implying that migration and remittances also have indirect positive effect on income.

Adams (2005) studied the impact of remittances on poverty and inequality in Guatemala using counterfactual estimation method. Consumption function was estimated for non-remittance receiving households using OLS method as there was no evidence of self-selection. This was used to predict the counterfactual consumption for those who receive and who don't receive remittance in the hypothetical case of no remittances.

To get consumption in the actual case (including remittances), actual remittance values were added to the counterfactual consumption values (i.e., for non-remittance receivers the counterfactual and actual values will be the same as should be). The effect of international remittance on poverty depends on the type of measure considered and is generally small. The head count ratio rose from .55 to .56 while the poverty gap and squared poverty gap ratios respectively fell from .24 to .23 and from .14 to .15. Inequality did not change. Adams (2006) applied similar method in Ghana and found that the head count ratio increased from .33 to .39 due to international remittances while the squared poverty gap decreased from .10 to .7. The poverty gap ratio and the Gini coefficient did not change. In both countries the proportion of households who receive international remittances was only 8%. Barham and Boucher (1998) used a double selection method (for migration and labor force participation) to estimate counterfactual income in the case of no remittance in their study in Nicaragua.

They found that remittances increased inequality as reflected by a rise in the Gini coefficient from .38 to .43 (while it decreased from .47 to .43 when remittances are treated as exogenous additions to income). Using similar method, Acosta et al (2008) found that remittances reduced both inequality and poverty in 10 Latin American and Caribbean countries. The poverty reducing effect is exaggerated when remittances are considered as exogenous additions to income while the impact of such assumption on inequality is mixed. The selection result shows

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that migrant households are negatively selected in their unobservable characteristics in all countries except Ecuador for which no evidence of selection was found. Gubert et al (2010) applied similar method in Mali where 20% of the sample received International remittance. They found that migrant households are negatively selected and International remittances led to a fall in the fraction of poor people from .49 to .46 (the effect is larger when remittances are assumed to be exogenous additions). They did not find significant effect on inequality.

There are also studies that tried to see the effect of remittances on inequality and poverty using decomposition techniques. By decomposing inequality and poverty in to different sources, it is possible to see the contribution of each income source including remittance to inequality and poverty. It is also possible to see the effect of a marginal change in each income source. Stark et al (1986) developed the decomposable Gini index to see the effect of a marginal change in remittances on inequality. They particularly wanted to test if the effect varies according to the prevalence of migration in the area. They get that the distribution of remittances is more unequal in the first village than the second one. Besides, in the first village remittances mainly go to the better-off households while in the second village they go even to the very poor. A marginal increase in remittances worsens inequality in the first village while the opposite is true in the second village. This supports the argument that remittances are more equalizing (or less un equalizing) the higher the prevalence of migration. In a similar fashion, Taylor et al (2005) used the decomposing method to study the effect of remittances on inequality and poverty using rural data collected from 14 Mexican states. Overall, remittances worsen inequality, but, there is huge difference across regions. In the West-Central Mexico, where migration prevalence is *the* highest, remittances have equalizing effect where as in South-Eastern region where migration is the lowest remittances have the highest unequal zing effect on the margin.

Fayissa and Nsiah (2008) argued that remittances enhance economic growth in countries where financial systems are not very strong by providing an alternative way to finance Investment and help to overcome liquidity constraints. Iqbal and Sattar (2005) shows that real GDP growth is positively correlated to workers' remittances during 1972-73 to 2002-03 and workers' remittances emerged to be the third important source of capital for economic growth.

Adams and Page (2005) used the data of 71 developing countries in their study on remittances, inequality, and poverty and concluded that remittances significantly reduce the level, depth and severity of poverty in the developing world. Lucas (2005) argues that remittances probably contributed in a significant way to poverty alleviation process. The above scholar's studies independently poverty and economic growth, but these studies examine impacts of migrant remittance on both in past and recently in Ethiopia in which the amount of remittance significantly is increasing.

CHAPTER THREE

Trend and Performance of remittance in Ethiopia

3.1 Oversea migrations and remittance: An overview

Before proceeding to empirical analysis, it may be useful to have an overview of overseas migration and development of workers' remittances since 1977. Approximately 2 million Ethiopians have migrated to different countries around the world during 1980-2010(CSA, 2010). Majority of the Ethiopians have migrated to the African countries especially Kenya ,Somalia ,Sudan and south Africa ,USA ,European countries ,united Arab emirates ,sued Arab and etc. Other major concentrations and absorptions are Oman and Kuwait. Ethiopian workers also migrated to several other countries both developing and developed around the world. In the decade of 1970s, the total amount of remittances sent home by the migrant workers increases as the number of migrant to Middle East, Arab emirates and South Africa increases. However, remittance flows continue to decline after reaching a peak in 1993-95. The declining trend in remittances continues to persist till 2000. The Ethiopian overseas migrant showed a recurring and fluctuating behavior from 1995 to 2010.

3.2 Migration patterns and Destinations in Ethiopia

The migration problem in the Ethiopia has been substantial in the past four decades. During the period between 1975 and 1995, flows of refugees in the region peaked (Bariagaber, 2006). The political overthrow of the Ethiopian Imperial Government in 1974, the independence struggle of Eritrea, the war between Ethiopia and Somalia between 1977 and 1978, and the civil conflict in Sudan and Somalia in the 1980s have all been mentioned as major catalysts of large involuntary movements of people in the region (Bariagaber, 1997)

The high unemployment, massive poverty, expectations for higher earnings abroad may be reasons for over the time increase in the number of Ethiopia going abroad. Majority of migrant workers are either unskilled or semi-skilled from low income backgrounds which allowed their families behind to establish small business, get hold of real assets and make considerable and extensive enhancement and improvement in their standard of living.

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International migration flows out of Ethiopia are relatively small. The World Bank cites an emigration rate of 0.6 percent of the population in 2005, which amounts to a stock of 445,926 persons (2008). Studies have demonstrated that Ethiopian migrants generally spend 1-3 years in neighboring countries (such as Kenya, Djibouti, or Somalia) before immigrating to the west. Ethiopian refugees residing in refugee camps in neighboring countries may also receive resettlement in other countries further abroad, as in the case of 130 Ethiopian refugees who were resettled in the UK in 2006 (Collyerand de Guerre, 2007). Figure 3.1 illustrates the destination of Ethiopian migrants. In the figure below illustrated as that the largest Ethiopian migrants are lived Asia (37%) and USA (29%) in which the least are Latin America (0.2%) and Oceania (1.5%)

Figure 3.1: Proportion of Ethiopia's International Migration Stock, Residence by Continent: 2000-2002
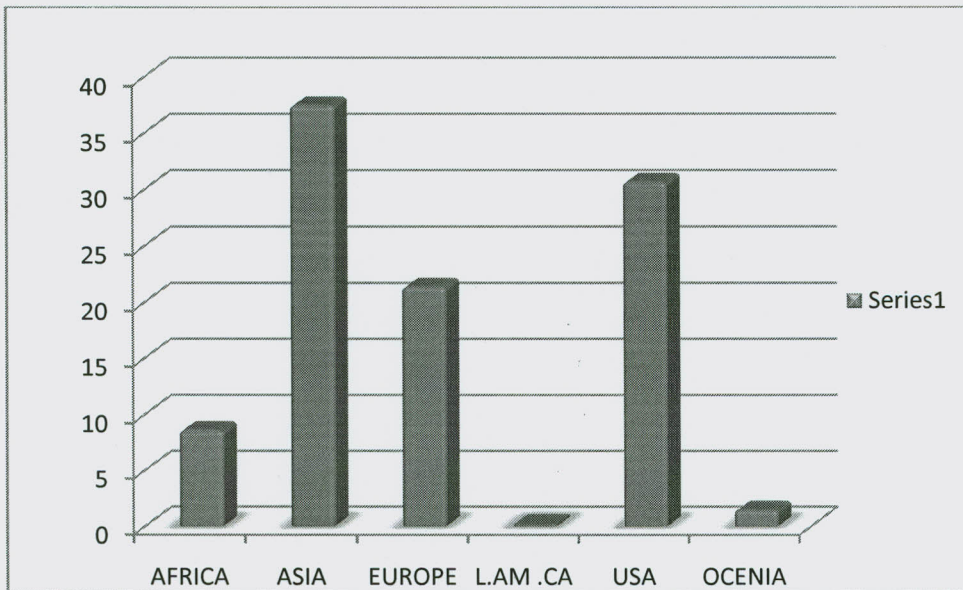
Source World Bank (2008)

Note L.AM.CA is Latin America and Cambrian countries

Recently, According to the World Bank data, the number of Ethiopians abroad was estimated at a level of 620 thousand in 2010. The total number of Ethiopian migrants is equivalent to 0.6% of the total population of the country. The main destinations of Ethiopians migrants are Sudan, the United States, and Israel; the combined number of Ethiopians in these three countries comprises more than 60% of Ethiopians abroad (about 380 thousand migrants). Ethiopian workers in Saudi

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Arabia amount for 4.6% of Ethiopians abroad. Moreover, Ethiopians in Western Europe amount for 11.2% of migrants

Table 3.1 Top 13 Ethiopian migrant receiving countries in 2010

Receiving country	Number of migrant	Percent
Sudan	152094	24.5
United States	139693	22.5
Israel	87556	14.1
Djibouti	34697	5.6
Kenya	30763	5
Saudi Arab	28618	4.6
Canada	22951	3.7
Germany	21085	3.4
Italy	17226	2.8
Sweeten	12534	2
United kdom	10298	1.7
Netherlands	8144	1.3
others	54746	8.8
total	620,405	100

Source World Bank (2011)

3.3 Remittance Volumes, Sources and Destinations

The NBE directive emphasizes that due attention needs to be given to improving the inward remittance services on view of mobilizing increased foreign reserves. Remittance operators also offer outward remittance services as much as they do inward remittances. This is in particular an important activity for the informal sector operators. Except 20% of the firms, the rest provide outward international remittance services in addition to their inward such services.

According to the operator with such system, remittances are sent for purchase of housing, purchase of land and support of family.

In the formal sector remittances sent from abroad are paid in local currency (Birr). The NBE's directive on foreign exchange does not allow remittance recipients to cash in their balances in foreign exchange. As a result, the formal remittance operators pay recipients the domestic

currency (Birr) equivalent of the amount of remittance. The informal operators, on the other hand, allow foreign exchange payments. This may partly explain the fast growth of informal operators and the growing preference to those in the face of the recent high inflation in the country.

The volume (based on just one response) to domestic remittance received has grown from 357 million USA dollars (1.82% share of GDP) in 2006 to 514 million USA dollar (even if share is decreased to 1.72%) in 2010/11, while the number sending continent (UNDP, 2009). Although Asia accounts for the largest stock of Ethiopian migrants (37 percent), North America accounts for the largest remittance flows in dollar value (41%). The exact reason for this is unknown and would be based on speculation.

Figure 3.2: Proportion of Ethiopia's International flow of remittance, by Continent: 2000-2002.
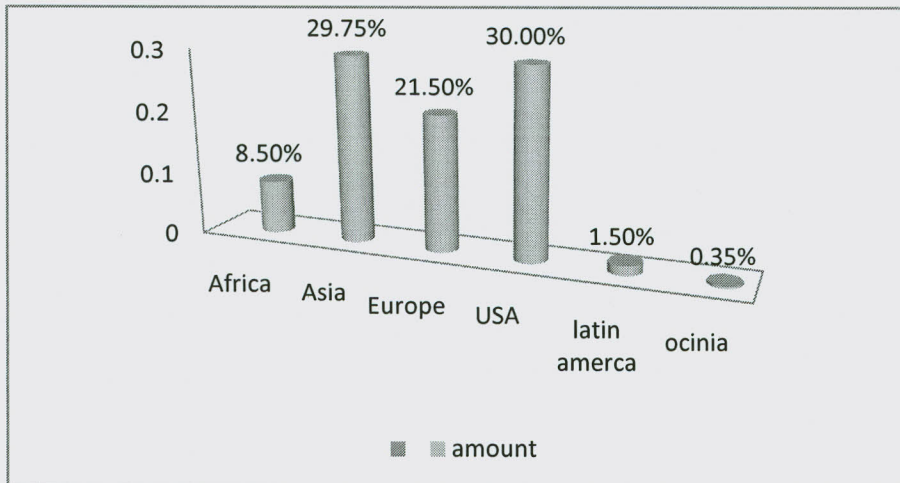
3.4 Trends in Ethiopian remittance:

The increasing number of migration from Ethiopia has led to an increase in the remittances inflow into the country. Over the years, Ethiopia has experienced a substantial increase in the remittances inflow.

During the Derg period (1982/83–1997/98), the rate flow of remittance was decreased to -0.17% various factors caused the poor performance during this period, as can easily be seen if we disaggregate this period into rather short time intervals. During the period 1982/83 to 85/86 the flow of remittance rate was -0.01 and from. From 1986/87 to 1990/91, a period flow of remittance also was increased to .23.however; in periodic of 1991/92 and 1992/93 remittance flow to Ethiopia was decreased to approximately .013. On the other hand between 1991/92 and 1992 /93(the last two index in the figure below) the actual value of remittance was estimated to 1.7% and 1.5 % respectively.

Figure 3.3 Trend Analysis plot for remittance
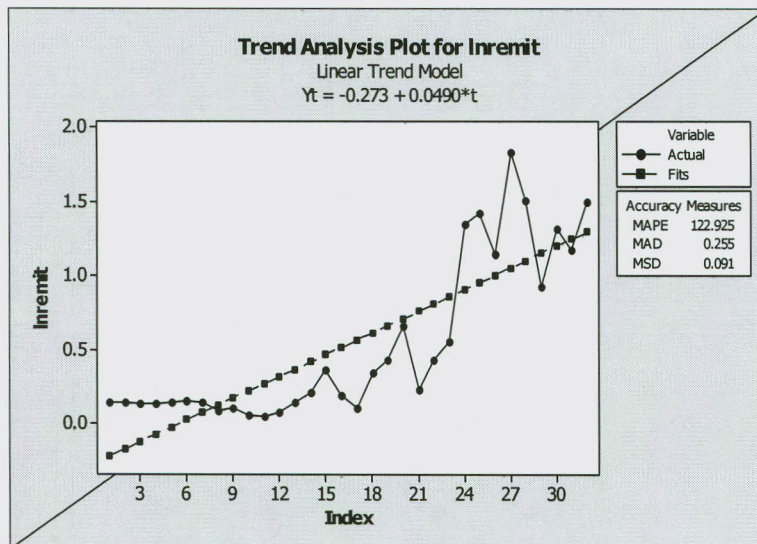
Source author calculation from MINTAB software

3.5 Growth and poverty profile of Ethiopia

Although Ethiopia is endowed with ample resources base that can induce a change, the country is still characterized by worsened living condition and recurrent famine. A comprehensive review of the state of affairs point that between 1981/82 to 2009/10, the average growth rate of real GDP in Ethiopia was on average 3.4% whereas poverty head count was averagely 1.6%. A further

Country was break down of the performance into the two regimes. During 1981/82 to 1998/99 of the derg period, growth rate of real GDP on average was 1.9% and poverty head count was 1.82. This is actually lower than the planned growth rate of 4.3% and 6% (Bayene 1998).

Various factors caused the poor performance during this period, as can easily be seen if we disaggregate this period into rather short time intervals. During the period 1982/83 to 85/86 poverty rate increased to approximately 1.821% and the growth rate was 0.23 percent (per capita growth being -2.3 percent). Among other things, the instability induced by the emerging new policy as well as the war with Somalia could explain a good part of this dismal growth performance and poor reduction of poverty. From 1986/87 to 1990/91, a period characterized by relative stability and good weather, especially in 1990/91, the growth rate increased to 4.9% and the poverty head count rate was also reduced to approximately 1.62   (1.8 percent in per capita terms). In 1991/92 and 1992/93, periods of severe drought, growth decelerated by 5.3 percent and 8.3 percent respectively ,simultaneously poverty eradicated to 1.713 . On the other hand between 1991/92 and 1992 /93 the actual value of lnRGDP   and lnPOVT was approximately 10.5, 1.82 ,10.71 and 1.722 (in index number 27 and 24) respectively see figure 3.4 and 3.5
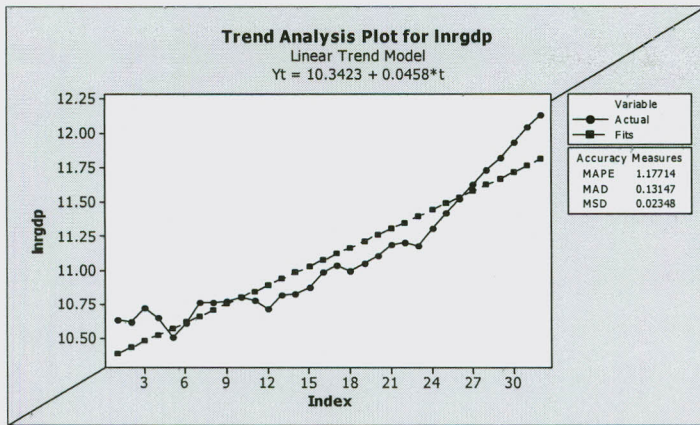
Figure 3.4 Trend Analysis plot for RGDP
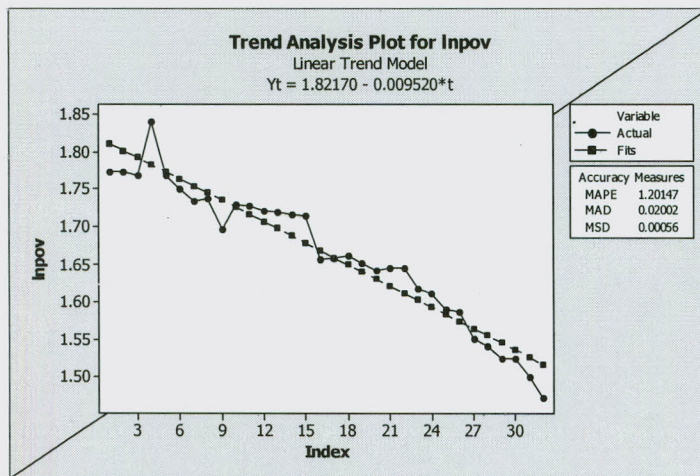
Source calculation of outer from MINITAB software

Figure 3.5 Trend analysis plot for poverty.

The growth rate rose to an average of about 11 percent in the subsequent two years, mainly showing the recovery from the small base, only to fall back to no growth (-0.01 percent) in 2004–2006. It is interesting to note that growth episodes are extremely irregular. This is strictly linked to agricultural growth; which in turn is related to the vagaries of nature. Such is the structure inherited by the EPRDF in 2007. Growth during the post-Derg period is quite good where real total and per capita GDP on average grew by 3.7% and 0.7% per annum, respectively. This figure rises to 3.6 percent (and to 2.6 percent in per capita terms) if one excludes the abnormal years 2006–2007. Similarly poverty head count ration of country is also reduced especially trough year 1995 _2005 and 2010/2011 the actual values of poverty head count ratio becomes 1.6_1.55 and 1.5 respectively.

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3.6 Remittance, economic growth and poverty

Flow of Remittance flows tend to act counter-cyclically in Ethiopia that is they increase at times of distress in the receiving countries, working effectively as an informal Stabilization Fund. Specifically it shows that remittances as a proportion of RGDP tend to increase whenever real GDP growth loosens, this assertion is particularly the case after 2005(beyene,2005). Of course, this correlation does not deal with all the complexities involved in slow-downs in economic activity, when we can witness the common effects of devaluations, adjustment policies, and adverse external conditions. The result obtained in this study is consistent with that of Giuliano and Ruiz-Arranz who found that remittances are more countercyclical in countries with less developed financial systems (Giuliano and Ruiz-Arranz, 2005).
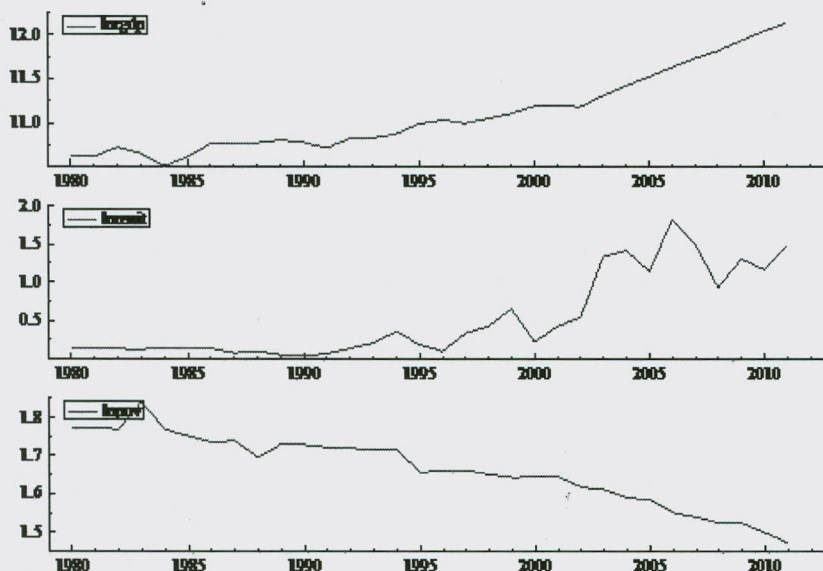
Source calculation of outer from pcGiv10 software

Figure 3.6 time series plot among remittance, real GDP and poverty.

The above figure Depicts that positive relationship between GDP and remittances and negative relationships between remittance inflow and poverty head count, GDP and poverty. GDP and remittances inflow show an increasing trend from 1987 till 1994, however, after 1994 remittances inflow depict consistently declining trend till 1996, and also increasing till 1999

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and GDP increase at decreasing rate during this two   period. After 2000 both series move in the upward direction. The figure makes it clear that over the time, trend in remittances and GDP growth are almost the similar. From this two graphs the studies achieved that flow remittance to Ethiopia cyclical patterns as (Giuliano and Ruiz-Arranz, 2005) whereas, GDP is increasing after 2000 to 2003 at decreasing rate from 2004 to 2011 at increasing rate ,its actual values are 11% to 11.25 and 11.75 to 12.50 respectively. Poverty head count, however; was decreasing very fastly at the Sam year that means decreasing at increasing rate from 1.67% to 1.6%   and 1.55% to 1.23% respectively.

When we examine remittance flow to Ethiopia and poverty head count in these studies above the figure3.6 shows that poverty is negatively (poverty alleviation) related to increase in remittances during the period of 1980-2011 in Ethiopia. In the decade of 1980s poverty decreased coupled with increase in remittance inflows whereas decrease in remittance inflow during 1990s is associated with increase in poverty with remittances reaching its lowest point (see figure 3.6). However, after the incident of 1994/1996 remittances inflow sharply moves in upward direction whereas poverty starting to decline as well. The above data analysis is also supported by the empirical finding in literature as Siddiqui and Kemal (2006) pointed out that increase in poverty during 1990s may be due to short fall of remittances in this decade. Therefore data and literature both support the hypothesis that remittance contributes to economic growth and poverty reduction in Ethiopia.

CAPTER FOUR
Data and Methodology

4.1 Data types and Sources

The study was employed secondary sources of data. The nature of data is time series data that will cover over the periods of 1980-2011. The data was collected from different published such as books, journals, articles, report, etc. Furthermore the data of macroeconomic variables was obtained from different institutions such as WB, MOFED, NBE, IMF, CSA and HDI

4.2 Econometric methodology

To determine the impact of migrants remittance on the economic growth of Ethiopia , a least square regression analysis will be carried out on a time series data. The essence was to test the relationship between the variables whether positive or negative and if significant or not (Elbadwi, 1992). To prevent the emergence of spurious results, a unit root test was carried out in order to test for stationarity and to determine the order of integration. While a co integration test was carried out to detect if there exists a long run or/ and short run relationship between migrants remittance inflows and economic growth in the Ethiopian economies.

4.2.1 Growth model

There are no generally accepted models of the growth process and hence no standard analytical frameworks that are appropriate for studies such as (Abramovitz, 1983). Not only that theory offers little guidance; there is also no consistent evidence as to the relationship between remittance and growth. Besides, economic growth may depend on factors that change over time. On the top of these, simultaneity, multi co linearity, and rough proxies are important practical problems. Such constraints make the empirical study on the impact of remittance very challenging. The Empirical approach to regression in this study was then not simply to maximize the Goodness of fit of the model but to include only those variables inherently

Reasonable in the Context of this study. On account of these facts and data availability as well as in view of its relevance to Ethiopia, in this study, a model developed by(Kweka and Morrissey,1999).

The justification for using remittance on education, proxy for human capital is evident in the context of developed country. Education stands out as a strategic factor for adding economic accomplishment and also for enlarging the potential for richer human experience- perhaps the main objective of economic growth.

Thus both theoretical and empirical literature hypothesized that remittance affect not only economic growth but also poverty reduction, therefore these studies was see that the impact of remittance which is proxy by migrant remittance on economic growth and poverty reduction. And also extended version of neoclassical model (Barro, 1996) with this frame work, to investigate the role of remittance on economic growth and the growth equation expressed as follows.

RGDP=F (REM, RPIV, X) -----------1

Whereas RGDP real growth domestic product, proxy for growth, REM remittance as share of GDP, RPIV real private investment, X control variables such as human capital and openings to trade.

Thus an explicit estimable econometric model is formulated as follows:

$LnRGDP_t= \delta+\beta_1 lnREMt+ \beta_2 lnRPIV_t+\beta_3 lnHC_t+ \beta_4 lnOPPt+\varepsilon_t$----------2

Where all variables are defined previously except, εt, white noise process, t, time and ln natural logarithmic. Log transformation can reduce the problem of heteroscedasticity because it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2003). It is important to note that the model is a multiplicative one where all parameters (coefficients) represent constant Elastic ties. Theoretically, remittance is expected to have a positive effect on economic growth and poverty reduction. Thus an increase in remittances can directly lead to economic growth, thus poverty reduction, ceteris paribus.

4.2.2 Unit Root Procedure

While the bounds test for co integration does not depend on pre-testing the order of integration, the variables need to either be I(0) or I(1) or mutually integrated and not I(2).Hence the need to test for unit root to ascertain the absence or otherwise of I(2) variables cannot be overemphasized(Gloria owia,2008). the study tests for the time series properties of the variables that enters the growth and poverty model to avoid the estimated coefficients being spurious by employing the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests proposed by Dickey and Fuller (1979; 1981) and Phillips and Perron (1988). Since the error term in the Dickey-Fuller (DF) test might be serially correlated, the possibility of such serial correlation is eliminated in the following Augmented Dickey-Fuller model.

From above mentioned real gross domestic product

$$\Delta RGDP_t = \delta + \beta RGDP_t + \theta \,_{,\,+,}^{J} \,\Delta KLMNO\# \; 4 + Ut\text{--------}3$$

Augmented Dickey-fuller for real gdp

Where as

$$B = 1 - \theta$$

The null hypothesis (H_0) of ADF is $\beta = 0$ against the alternative hypothesis (H_1) of $\delta < 0$. Non rejection of the null hypothesis implies that the time series is none stationary whereas Rejection means the time series is stationary. Phillips and Perron (PP) have suggested a non-parametric test as an alternative to the ADF test, though it also tests a null hypothesis of unit root. Phillips (1987) and Perron (1988) unit roots test use non-parametric methods to adjust for serial correlation and endogeneity of regressors thereby preventing the loss of observations implied by the augmented Dickey-Fuller test. Again, the usefulness of the PP test over the ADF is that it allows for the possibility of heteroscedasticity error terms (Hamilton, 1998)

4.2.3 Co-integration Analysis

The objective of this section is to use an appropriate method in order to empirically evaluate the theoretical and empirical propositions illustrated above. The use of stationary variables in regression models is required to reduce the spurious results that are likely to arise when the variables are specified non stationary in their level form. However, use of variables in their differenced form removes (long-run) information from the data, resulting in a model that can only provide partial (short-run) information on the relationship between the variables.

Further, by not accounting for the potential long-run relationship among the variables, models constructed using only differenced data may be miss-specified if there is existence of such long-run influences, resulting in biased parameter estimates. To avoid such problems, one must test to determine whether a long-run relationship exists between the variables in the model. Therefore, in the present context, application of co integration technique would enable us to examine the long-run equilibrium relationship between economic growth, poverty and its determinants. The technique would also enable us to trace out the long-run and short-run response of economic growth and poverty independently to their determinants.

The co integration literature has expounded different methods of testing for the existence of long-run relationship among economic variables. These methods include the residual based co integration test by Engle and Granger (1987), the maximum likelihood based on Johansen test (1988; 1991) and Johansen and Juselius (1990; 1992) tests. These tests have been identified to give contradictory results and also provide less robust estimates. The residual-based co integration tests are inefficient and can lead to conflicting results, especially when there are more than two I(1) variables under consideration (Pesaran and Pesaran, 1997). The Johansen (1988; 1991) and Johansen and Juselius (1990) approaches are used in multivariate cases, where co integrating vectors and rank has to be determined (verbic, 2003).

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4.2.4 The ARDL Co integration Approach

The deference between ARDL and Johnson, any other contrition analysis is mentioned in the generalization of ARDL model parts (varbic, 2004) but, let us see its approach on these studies and the researcher's argument. Most researchers argue that Johnson co-integration technique is the most accurate one to apply for I(1) variables .However, recently a series of studies by Pesaran and Shin (1996); Pesaran and Pesaran (1997); Pesaran and Smith (1998) and Pesaran et al. (2001) have introduced an alternative co integration technique known as the 'Autoregressive Distributed Lag' (ARDL) bound test. In generally, this approach has many advantages over other co-integration techniques such as that of Johansen and Juselius (1990).

First, this approach allows for smaller sample sizes compared to the Johansen co-integration technique (Ghatak and Siddiki 2001). Second , the technique of Johansen and Juselius requires that the variables are integrated at the same order, but the ARDL approach does not. The ARDL approach can also be used regardless of whether the variables are all I (0), all I (1), or I (0) and I (1) (Baharumshah et al. 2009). Even though some of the model's regressors are endogenous, the bounds testing approach provides unbiased long-run estimates and valid t-statistics (Narayan 2005; Odhiambo 2009). As Bahmani- Oskooee (2004) explains, the first step in any cointegration technique is to determine the degree of integration of each variable in the model but this depends on which unit root test one uses and different unit root tests could lead to contradictory results. For example, applying conventional unit root tests such as the Augmented Dickey Fuller and the Phillips-Peron tests, one may incorrectly conclude that a unit root is present in a series that is actually stationary around a one-time structural break (Perron, 1989; 1997) The ARDL approach is useful because it avoids these problems.

Yet another difficulty of the Johansen co integration technique which the ARDL approach avoids concerns the large number of choices which must be made: including decisions such as the number of endogenous and exogenous variables (if any) to be included, the treatment of deterministic elements, as well as the order of vector autoregressive (VAR) and the optimal number of lags to be used. The estimation procedures are very sensitive to the method used to make these choices and decisions (Pesaran and Smith 1998).

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this approach provides a simultaneity method of assessing the short- and long-run effects of one variable on the other (Bentzen and Engsted 2001). Pesaran and Shin (1999) originally introduced the ARDL modeling approach and Pesaran et al. (2001) later extended it.

In order to implement the bounds test procedure for co-integration, the following restricted (conditional) version of the ARDL model is estimated to test the long-run relationship between economic growth and its determinants:

$$\Delta LnRGDP_t = \quad \delta + \, ^h_{DYT} \, pf\infty :\_m\text{-}Jb \ H \ W \quad + \quad ^h_{DYT} j \ fv :\_mkx1bH \ W \quad + \, ^h_{TYT} 2fv :\_34 \ bH \ W$$

$$+ \, ^h_{TYT} v5 \ f :\_6kkb \ H \ W \ \beta_1 lnREMt_{-1} + \beta_2 \ lnRPIV_{t-1} + \beta_3 lnHC_{t-1} + \beta_4 lnOPPt\text{-}1 + U_t \text{------------} 4$$

Where all variables are as previously defined and Δ is the first difference operator. The parameters α, β, θ, $\square$, and¥ denote the short-run dynamics of the model to be estimated via the error correction framework and $\beta1$, $\beta2$, $\beta3$, $\beta4$, and $\beta5$ represent the long-run parameters. α is the constant term (drift) in the ARDL model and U_t is the white noise error term.

The ARDL method estimates $(p+1)^k$ number of regressions in order to obtain the optimal lags for each variable, where p is the maximum number of lags to be used and k is the number of variables in the equation. Since annual data is used, 1 lag is selected as the maximum lag (p) following Pesaran and Pesaran (1997). The optimal model can be selected using the model selection criteria like Schwartz-Bayesian Criterion (SBC) andAkaike Information Criterion (AIC).The diagnostic and stability condition should be checked to know the appropriate ARDL model. The first step in the ARDL bounds testing approach is to estimate equation (4) by ordinary least squares (OLS) in order to test for the existence of a long run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables, i.e.,

$H_o \ \beta1 = \beta2 = \beta3 = \beta4 = \beta5 = 0$, against the alternative

$H_1. \ \beta1 \neq \beta2 \neq \beta3 \neq \beta4 \neq \beta5 \neq 0$ we denote the test which normalizes on RGDP

By F_{rgdp} (RGDP /REMT, HC, OP, RPIVt,).

Two asymptotic critical values bounds provide a test for co integration when the independent variables are I (d) (where $\leq 1 \leq d$): a lower value assuming the regeressors are I (0) and an upper value assuming purely I (1) regressors. If the F-statistic is greater than above the upper critical value, the null hypothesis of no long-run relationship can be rejected irrespective of the orders of integration for the time series. Conversely, if the test statistic falls below the lower critical value the null hypothesis cannot be rejected. Finally, if the statistic falls between the lower and upper critical values, the result is inconclusive. This study uses the critical values developed by Narayan (2004) since it is more appropriate for small samples. Once co-integration is confirmed, the next stage is to estimate the long-run coefficients of growth function and the associated ARDL error correction models. In the second step, once co integration is established the conditional ARDL (p1, q2, q3, q4, q5, q6) Long run model for RGDP can be estimated as: by using above the re-parameterization of ARDL which is done by the help of (verbic, 2004).

$$LnRGDP_t = \delta + \sum_{\boxed{2}-1}^{\boxed{2}} \beta 1 \, lnRGDPt - 1 + \sum_{\boxed{2}-1}^{\boxed{2?1}} \beta 1 \, lnREMt - 1 + \sum_{\boxed{2}-1}^{\boxed{2?2}} \beta 2 lnRPIVt - 1$$
$$+ \sum_{\boxed{2}-1}^{\boxed{2?3}} \beta 3 lnHCt - 1 + \sum_{\boxed{2}-1}^{\boxed{2?4}} \beta 4 lnOPPt - 1 + U_t$$

-------------5

Where all variables are as previously defined. The estimation of (5) involves selecting the ordersof the ARDL (p, q1, q2, q3, q4) long-run model using AIC and SBC.

Finally, we obtain short run dynamic parameter, by estimating error correction model associated with long run estimated is given as.

$$\Delta LnRGDP_t \quad = \delta \quad + \quad {}^h_{0YT} vz\,f9\_mywk\,bH\ W \quad + \quad {}^h_{DYT} pf\alpha:\_m\text{-}J\ bH\ W \quad + \quad {}^h_{DYT} j\ fv:\_x71\,bH\ W$$
$$+ \quad {}^h_{TYT} 2fv:\_34\ bH\ W + \quad {}^h_{TYT} v5\ f:\_6kkb\ H\ W + \text{€}ecm_{t\text{-}1} + U_t \text{--------------}6$$

The coefficients of parameters are dynamic coefficients of the model's convergence to equilibrium, € is the speed of adjustment to long-run equilibrium following a shock to the system and ECM error correction mechanism.

4.3 poverty model

It must be emphasized that, there is not much guidance available from theory regarding the appropriate specification for the poverty determinants. However, the researcher uses similar model suggested by Ravalli on (1997), Ravalli on and Chen (1997) and Adam and Page (2005) to explore the impact of remittances on poverty .Then the studies like as growth equation postulate poverty equation as follows

Pov=f (RGDP, IN, REMT) ------7

 Whereas pov, poverty measure ,whether head count ratio or poverty gap or both due to availability of data RGDP, real growth domestic product, IN income inequality, REMT, remittance and openings to trade .

Thus its explicit econometric form is

$Lnpov_t= \beta + \alpha_0 lnRGDPt + \alpha_1 lnIN_t + \alpha_2 lnREMT_t + \alpha_3 lnOPPt + \varepsilon_t$ ----------8

Whereas the coefficients of explanatory variables will expected to be, α_0, $\alpha 1$, $\alpha 2$ and α_3 negative, positive, positive/negative respectively. Because ,all mechanism log transformation technique, re-parameterization ,long run and short run relationship applications ,co-integration approach, ARDL approach are detailed explained above growth model, but here will apply how go through poverty model.

Unit root procedure, augmented ducky fuller for poverty given as

$\Delta Povt = \Box + \delta povt_{-1} + \overset{5}{\underset{k}{\text{Æ}}} j f\Delta$, T H $+e_t$ ------9

 Whereas   B=1-δ, Ho: β=0 vs. H1; β<0 the descriptions are the same as above growth model

To estimate bound testprocedure co-integration, the estimated conditional ARDL model to test the long run relationship between poverty and its determinants variables is as follows.

$ln\Delta pov_t = \delta_0 + \overset{5}{\underset{k}{\text{Æ}}} . f\Delta...80DV,$ T Hs $+ \overset{5}{\underset{k}{\text{Æ}}} / f\Delta...8-$, T H$+ \overset{5}{\underset{k}{\text{Æ}}} ' f\Delta...80Xx$, T H $+\delta_1 lnpov_{t-1} +$ $\delta_2 lnRGDPt_{-1} + \delta_2 lnIN_{t-1} + \delta_3 lnREMT_{t-1} + \alpha_3 lnOPP_{t-1} + U_t$-------10

All parameters are similarly defined as growth model.

Next the long run ARDL (p, q1, q2, q3) for poverty can be estimated as.

Lnpov$_t$= $\frac{h}{DJT}$; W_8' qbH W $\frac{BT}{DJT}$; I o_mywkb H W + $\frac{B\$}{DJT}$;] o_x7bH W + $\frac{B^{"}}{DJT}$;] :_m-J[bH

W α$_4$ $\frac{B^{"}}{DJT}$:_6kk bH W U$_t$ ---------------11

The estimation of above model, involves by the information of SBC

Finally, its error correction model becomes.

lnΔpov$_t$=δ+ $\sum_{k}^{5}$ j fΔ...8 , T H+ $\sum_{k}^{5}$. fΔ...80DV, T Hs+ $\sum_{k}^{5}$ / fΔ...8- , T

H+ $\sum_{k}^{5}$ ' fΔ...80Xx , T H+ $\sum_{k}^{5}$ −Δ...8 VV, T H+ζecm$_{t-1}$ +U$_t$----------12

Where β, γ, η, ψ and ¥ are short run dynamic coefficients of model to adjustments of equilibrium, ζ speed of adjustment, ECM error coercions mechanism.

Variable Definitions

☐ Inequality

Inequality is measured by the Gini index. Gini index measures the extent to which the Distribution of income (or, in some cases, consumption expenditure) among individuals Or a household within an economy deviates from a perfectly equal distribution. A Lorenz Curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index Measures the area between the Lorenz curve and a hypothetical line of absolute equality, Expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.

☐ Human Capital

Human Development Index (H), the new developed index of human capital by United

Nations Development Program me (UNDP), is used to represent the level of human

Capital development. This index is a summary measure of three dimensions of human

Development; leading a long and healthy life (measured by life expectancy), being

Knowledgeable (measured by literacy and school enrolment), and having a decent

Standard of living (measured by GDP per capita, PPP US).

☐ Real Private investment ($US million; current)

The series for real private investment is derived from the difference between the total gross capital accumulation and total gross investment by the government (i.e. public sector investment). Foreign Direct Investment (FDI) was subtracted from private investment to get domestic private investment. The data was normalized by expressing them as a percentage of real GDP.

☐ Opening's to trade:-Openness is defined as percentage (%) trade of GDP. Trade is the sum of exports and Imports of goods and services measured as a share of gross domestic product.

CHAPTER FIVE

Results and discussions

5.1 Remittance and economic growth.

5.1.1 Unit Root Test

To check for the existence of stationarity, both PP-PERON and ADF unit root testis conducted on the variables listed on equations (1) and (2). A plot of the variables (in levels) as listed in apendex1 shows that all the variables are not stationary. On the other hand, the variables in first difference suggest the presence of stationarity. To empirically test for stationarrity and determine the order of integration, ADF and PP-PERON unit root test is conducted. The result shows that in all the three cases (i.e., columns) the variables are non-stationary when they are tested in levels. This is shown by the computed results which are less than the critical values in absolute term both at 5%, 1% and 10%. The variables in first difference are however, stationary. This implies that all the variables are integrated of order one [i.e., I (1)]. That is, the variables attained stationary after first difference. On other hand none of the variables are integrated order two (I2)

Table 5.1 unit root test results

	ADF- test			PP-test		
Variables	WithConstant and no trend	With Constant and trend	With no constant	WithConstant and no trend	WithConstant and trend	With no constant
LNRGDPt	1.303	1.813	0.81	0.22	.652	0.736
LNRPIVt	2.01	2.46	0.27	2.29	2.984	1.381
LnRMIT	.14	1.93	1.53	.146	2.1	1.41
LnOPPt	0.55	.955	0.49	.68	.75	0.736
LnHCt	1.76	.96	2.89	.728	2.44	3.08
At first difference						
DLRGDPt	4.977*	4.469*	2.73*	7.92*	7.52*	2.88*
DRPIVTt	3.404*	3.23*	6.885*	5.95*	4.03*	6.9*
DLRMITt	4.26*	4.57*	5.42*	5.74*	5.97*	5.43*
DLOPPt	3.44*	3.93*	5.578*	6.59*	6.84*	5.58*
DLHCt	6.08*	6.99*	2.731*	7.4*	6.32*	2.83*
Critical values						
1%	3.71	4.33	2.65	3.71	4.33	1.65
5%	2.98	3.58	1.95	2.93	3.71	1.92
10%	2.62	3.22	1.60	2.62	2.98	2.65

The results suggests that to use variables in the first differences

Whereas DL indicates that the variables are at the first difference form

(*) indicate that the differenced forms of variables are significant at all significant level

5.1.2 The bound tests results of ARDL model

The *ARDL* model was estimated from a recursive search of the optimal number of lags through the SBC and from the diagnostic statistics. Given the few observations available for estimation we set the maximum lag order of the various variables in the model equal to unity. Table 1.1 in appendix presents the *ARDL bound test*estimates. The researcher tested for the presence of long-run relationships in Eqs. (4). As we use annual data, all tests include a maximum of 1 lags to ensure lagged explanatory variables are present in the ECM; according to Gonzalo (1994), the cost of over-parameterization in terms of efficiency loss is marginal. The order of lags on the first-differenced variables for Eqs. (4) Was obtained from restricted ARDL by means of SBC, whilst ensuring there was no evidence of serial correlation, as emphasized by Pesaran*et al.*

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(2001). The calculated *F*-statistics are reported in appendix. For Eq. (4)F(*LNRGDP,LNREMIT ,LNHCt, LNRPIVT*) = 6.03 .From these results, it is clear that there are long-run relationships between the variables because its calculated *F*-statistics are higher than the upper bound critical value of 4.74 at the 1 % level. This implies that the null hypothesis of no cointegration between the variables in Eqs. (4) Cannot be accepted. Evidence of cointegration relationships between the variables also rules out the possibility of estimated relationship being 'spurious'.

Next to estimate long run coefficients we can easily examine that no heteroscedastcity that means the Null of there is homosedastistc variance between explanatory variables un able to reject at a given CHSQ (1) level and also no autocorrelation problems since Durbin Watson is greater than 2 and R^2.On the other hand the multivariate variables are normally distributed therefore the model adequately is verified (Gujarati, 2004).

Table 5.2 ARDL to estimate long run coefficients

Autoregressive Distributed Lag Estimate ARDL(1,0,0,0,1) selected based on Schwarz Bayesian Criterion Dependent variable is LNRGDP			
Regressor	Coefficient	Standard Error	Ratio[Prob]
LGDPT (-1)	1.0340	.078764	13.1284[.000] **
LNRPIVT	.0076139	.0079979	.995 [.351]
LnREMITT	.018336	.036862	.49743[.623]
LNOPPT	-.44301	.11274	-3.9295 [.000]**
LNOPPT (-1	.65814	.10311	6.3829[0.00]**
LNHCT	-.012447	.0187	.6625[.514]
CONS	-.48983	.3175	-1.54[.014]**
R-Squared .962547 R-Bar-Squared .953 S.E. of Regression .038411 F-stat. F (6, 24) 102.8782[.000] Mean of Dependent Variable 4 .034 S.D. of Dependent Variable .176Residual Sum of Squares .0354 Equation Log-likelihood 61.02 Akaike Info. Criterion 54.02 Schwarz Bayesian Criterion 49.003 DW-statistic 2.0423 Durbin's h-statistic -. 123[0.891]			

5.2.2 Results of the Long Run Relationship

These studies tests to decide the order of the lag of the *ARDL model before* testing the existence of a long run relationship among the variables. Results based on Schwartz Bayesian Criterion suggest that the process is an *AR* (1), that is, it contains unit root (see appendix1). Table 5.2 presents the results of the long-run parameters of the *ARDL* model.

As indicated in Table 5.2, most of the estimated coefficients have their expected theoretical signs except real private investment although openness is not statistically significant. The results indicate that, an increase in remittance leads to encourage economic growth. This means that, in the long-run, increases inflow of remittance from abroad has positive impact in real output of Ethiopian economy. The results show that the coefficient of real *GDP* is statistically significant at 1 percent level, indicating that if the country were to increase her remittance 1 percent, growth rate per capita will increased by 0.03869 percent.

The coefficient of human capital (*H*) is consistent with (Gloria Owife, 2006) and most of previous studies that a positive relationship should be observed between human capital and economic growth. Theoretically, if the human capital factor in Ethiopia increases, it increases opportunities of increasing per capita by generating income and consequently increases the growth. By the same token, decrease in human capital is expected to worsen for economic growth. The finding of this study show the expected positive relationship (0.356) between the two variables, which means that increase in human capital factor by 1 percent in the long run, will increases economic growth of Ethiopia by approximately 0.36 % and is significant at 5%, 1% and 10%.

Openings to trade do not seem to have a significant positive effect on economic growth in its normalized form as Gloria Owife (2008). The estimated coefficient in normalized form is negative (-0.62) and statistically insignificant. But, in its distributive lag form positives and significant this result shows that previous year the trade openness has positive impact on current year economic growth of Ethiopia. Real private investment however, positive and insignificant in both normalized form and its lag form to say that the impact the long run impact of on the growth of Ethiopian economy has positive impact on real private investments ,since in both case

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it is statistically insignificant meaning that no or almost poor evidence's on positive impact of Ethiopian economy.

HCBCY OUFPD K꧀QQꭓ(ML)

These studies examined that the variables in the model are co integrated provides support for the use of an error correction mechanism (*ECM*) in order to investigate the short run dynamics. Estimation results, still based on SBC and AIC, are presented in Table 5.4 the R^2 0.67 or adjusted R2 0.6 suggesting that such error correction model fits the data reasonably well. More importantly, the error correction coefficient has the expected negative sign and is highly significant. This helps reinforce the finding of a long run relationship among the variables in the model.

The results in Table 5.3 suggest that the immediate impact of changes in remittance on economic growth is positive. That is to say, the coefficient of the real *GDP* has the theorized in literature review positive sign indicating a positive impact on economy of Ethiopia in the short run which is consistent with the long run results. Since, the coefficient is statistically significant at 95% confidence level. This means that, in the short run, migrant's remittance flow to Ethiopia has significant impact on economic growth.

When we came to real private investment, it can readily be separated that this variable has a positive effect on economic growth and statistically significant at 95% level even if the coefficient is very small. The results suggest that, in the short run the real private investment has positive impact on growth of economy which is consistent with long run impact, but statistically insignificant in long run ,the evidence shows there should be some restrictions or policy measurements on real private investments in long run to have significant as short run. According to the short-run results, a percentage increase in real private investment could encourage economic growth by 0.0076 percent.

Tuning to human capital though it is statistically insignificant at 95% confidence level has negative impact on economic growth in short run, but doesn't confirm the studies .

Table 5.3 ARDL –VEC mechanism

Error Correction Representation for the Selected ARDL Model ARDL (1, 0, 0, 0, 1) selected based on Schwarz Bayesian Criterion Dependent variable is LNRGDP

Regresso	Coefficient	Standard Error	T.Ratio[p]
DLGDPT	.018336	.036862	.49743[.062]
DLNRPIVT	.0076139	.0079979	.95199[.035]*
DLNREMT	.012447	.018795	-.66225[.014]*
DLNOPPT	-.44301	.11274	-3.9295[.061]
LNHCT	-.012447	.018795	-.66225[.514]
CONS	-.48983	. 31754	.6625[.004]*
ECM (-1)	-.34039	.3175	-1.54[.014]*

List of additional temporary variables created: dLNRGDPT = LNRGDPT-LNRGDPT(-
DLNREMIT = LNREMIT-LNREMIT(-1)   DLNRPIVT = LNRPIVT-LNRPIVT (-1)
DLNHCT = LNHCT-LNHCT (-1)   DLNOPPT = LNOPPT-LNOPPT (-1)
dCONS   =   CONS-CONS(-1)   ecm   =   LNRGDPT   +.53869*LNREMIT   +
.22368*LNRPIVT   -.36566*LNHCT +   6.3201*LNOPPT -14.3901*CONS

R-Squared   .67712   R-Bar-Squared   .59640   S.E. of Regression
.038411   F-stat.   F (5, 25)   10.0664[.000]   Mean of Dependent Variable .020523
S.D. of Dependent Variable   .060462 Residual Sum of Squares   .035409   Equation
Log-likelihood   61.0218   Akaike Info. Criterion   54.0218   Schwarz Bayesian
Criterion   49.0028   DW-statistic   2.04

Turning to openings to trade, it can readily be distinguished that this variable has a negative effect on economic growth and statistically insignificant. The results suggest that, in the short run trade liberalization worsened Ethiopian economy economic growth through the income distribution. This effect translated into the long run which implies that, probably there should be some restriction on trade.

As a final point, the error correction term $ECMt-1$ which increases the speed of adjustment to restore equilibrium following shock has the expected positive sign and is statistically significant at 1 percent, thus reinforcing the attainment of a long run equilibrium relationship among the variables. The size of the error correction term (-.34039) precisely indicates that around 34% of the deviation from the long run equilibrium is corrected every year. This suggests a relatively
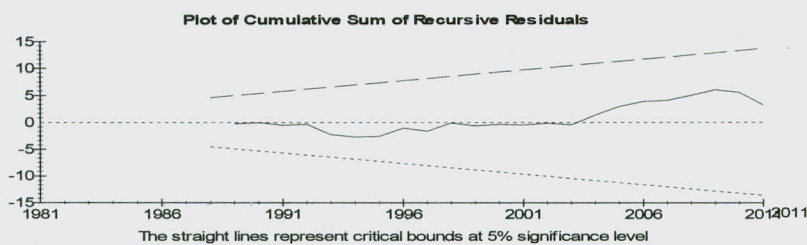
somewhat medium speed of adjustment from the short run deviation to the long run equilibrium. The results of ECM show that the coefficient of remittance (0.0183) is less than it in long-run.

5.2.4 Testing for structural break and ARDL model diagnostic.

To complement this study it is important to investigate whether the long run and short run relationships we found in the growth equation are stable for the entire period of study. For this purpose, one needs to test for parameter stability. The methodology used here is based on the cumulative sum (*CUSUM*) and the cumulative sum of squares (*CUSUMSQ*) tests proposed by Brown et al (1975). Unlike the Chow test that requires break point(s) to be specified, the *CUSUM* tests can be used even if we do not know the structural break point. The *CUSUM* test uses the cumulative sum of recursive residuals based on the first n observations and is updated recursively and plotted against break point. The *CUSUMSQ* makes use of squared recursive residuals and follow the same procedure. If the plot of the *CUSUM* and *CUSUMSQ* stays within the 5% critical bound the null hypothesis that all the coefficients are stable cannot be rejected. If however, either of the parallel lines are crossed then the null hypothesis (of parameter stability) is rejected at the 5% significant level. Figures 5.1clearly indicate that both the *CUSUM* and *CUSUMSQ* plots lie within the 5% critical bound thus providing evidence that the parameters of the model do not suffer from any structural instability over the period of study.

Finally diagnostic tests were conducted on the ARDL to confirm the presence of serial correlation, normality of the residuals, model specification as well as heteroscedasticity.
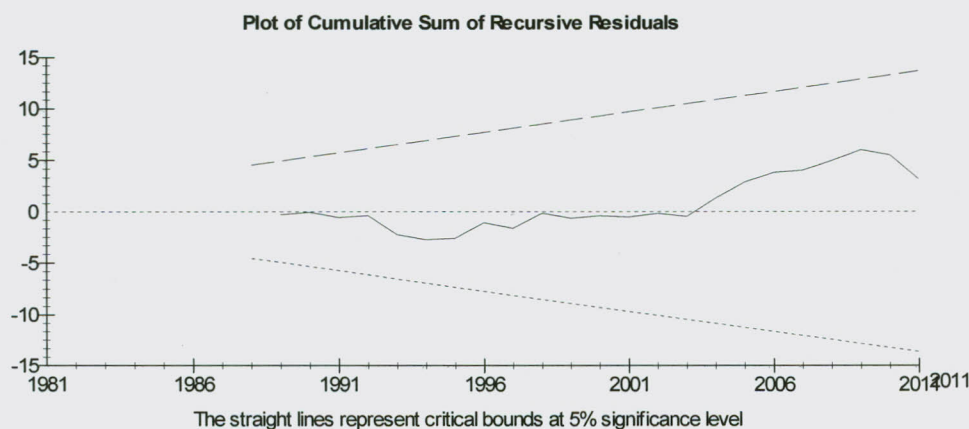
Figure 5.1 Plot of CUSUMand *CUSUMSQ for growth model*

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Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Table 5.4 ARDL model diagnostic tests		
Test Statistics	LM Version	F Version
* A: Serial Correlation	CHSQ (1) = .8401[.359]	F(1, 23)= .64068[.432]
* B: Functional Form	CHSQ (1) = .066837[.796]	F(1, 23)= .049696[.826]
* C: Normality	CHSQ (2) = .82752[.661]	Not applicable
* D: Heteroscedasticity	CHSQ (1) = 2.119[.145]	F (1, 29) = 2.1279[.155]
Wald statistic	CHSQ(1) = 8.6225[.003]	
A: Lagrange multiplier test of residual serial correlation B: Ramsey's RESET test using the square of the fitted values C: Based on a test of skewers and kurtosis of residuals D: Based on the regression of squared residuals		

Note that **Lm** indicates that Lagrange multiplier test Coefficients A1 to A7 are assigned to the above regressors respectively. List of restriction(s) for the Wald test: A1+A2+A3+A4+A5+A6=A7

Table 5.5 ARDL-VEC model diagnostic tests		
Test Statistics	LM Version	F Version
* A: Serial Correlation(ols case)	CHSQ (1) = .8401[.359]	F(1, 23)= .64068[.432]
Wald statistics	CHSQ (1) = .066837[.01)	F(1, 23)= .049696[.826]

The resections for Wald test is imposed as the coefficients for short run independent variables assigned as A1+A2+A3+A4+A5=A6 ,AS are coefficients of explanatory variables

The result of the diagnostic test confirms the adequacy of the model. That is, the null of there is no serial correlation is not rejected at any conventional significant level which shows that there is absence of serial correlation (autocorrelation) at the 5% significance level and the null of there is

homoscedastic variance (assumption of constant variance) between the regression of squared residual is not rejected at any of significance level which indicates that there is no hetroscedastcity problems. Furthermore, the model passes the Jarque-Bera normality test, that the residuals normality tests, implying that the residuals are normally distributed (verbic, 2004).

HCY KR&MDDWQLR WQE GF.RPDI PRETLDMFQ

Table 5.6 unit root test results for poverty model

	ADF- test			PP-test		
Variables	With Constant and no trend	With Constant and trend	With no constant	With Constant and no trend	With Constant and trend	With no constant
LNPOVt	1.866	0.853	1.13	0.22	1.92	1.74
LNINt	2.7	2.69	1.56	2.491	2.906	2.047
LnRMIT	.72	2.701	0.728	.146	.824	0.62
LnOPPt	0.55	.955	0.955	.68	.75	0.65
LNRGDPt	1.92	.58	1.303	.728	2.44	0.24
At first difference						
DLpovt	4.977*	4.469*	2.73*	7.92*	7.92*	7.52*
DLINt	4.04*	4.90*	6.885*	5.95*	5.82*	5.93*
DLRMITt	4.26*	4.56*	4.37*	5.74*	5.922*	5.967*
DLOPPt	3.44*	4.64*	3.93*	6.59*	6.59*	6.84*
DLRGDPt	6.08*	4.48*	6.99*	7.4*	4.44*	4.4*
Critical values						
1%	3.71	4.33	2.65	3.71	4.33	1.65
5%	2.98	3.58	1.95	2.93	3.71	1.92
10%	2.62	3.22	1.60	2.62	2.98	2.65

Note all values weather critical or significance (p) are within the absolute value

* indicates significant in all critical value that means 1%, 5% and 10% level

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5.3.1 Unit root tests

Her like growth model the studies uses both PP-PERON and ADF unit root testis to check weather existences of stationarty, conducted on the variables listed on equations (7) and (8). A plot of the variables (in levels) as listed in table 5.5 shows that all the variables are not stationary at level. On the other hand, the variables in first difference suggest the presence of stationarity.

This is shown by the computed results which are less than the critical values in absolute term both at 5%, 1% and 10%. The variables in first difference are, however, stationary. This implies that, all the variables are integrated of order one [i.e., I (1)]. Like as growth model, the variables attained stationary after first difference and none of the variables are integrated order two (I2)

HCY𝒞𝐊(c lFT QEDRƊ GPFLRETPR)

From output of STATA 11 which is summarized in appendix B for bound test, the calculated F-statistics are reported in appendix B. For Eq. (10)(*LNPOVt/remit,LNint, LNOPPt*) = 7.09 From these results, it is clear that there are long-run relationships between the variables because its calculated F-statistics are higher than the upper bound critical value of 5.72 at the 1 % level. This implies that the null hypothesis of no co-integration between the variables in Eqs. (10) Cannot be accepted. Evidence of co-integration relationships between the variables also rules out the possibility of estimated relationship being 'spurious'.

On the other hand to test the hypothesis of null joint coefficients of long run variables are zero the result shows that null hypothesis is rejected significantly at 95% confidence level therefore ,none of coefficients of explanatory variables are zero . Furthermore, Durbin Watson (its values >=2) indicates that there is no problem of autocorrelations not only this but scattered plot of all variables in the model fairly distributed which support no autocorrelations between explanatory variables(see appendix B) , in additions to that Durbin Watson is greater than R^2(the degree of variations between explanatory variables/goodness of fit) . Finally ARDL (1, 0, 0, 0, 2) model is selected based on SBC, so that the model is adequately verified. (Gujarati, 2003)

Table 5.7 ARDL lag estimate for poverty model

A) Autoregressive Distributed Lag Estimates ARDL(1,0,0,0,2) selected based on Schwarz Bayesian Criterion Dependent variable is LNPOVT			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LNPOVt(-1)	.515	.15437	3.3140[.003]
LNINT	-.0088511	.15437	11987[.001]
LnREMITt	-.010395	.0050186	-2.0712[.005]
LNOPPt	-.057316	.032256	-1.7769[.089]
LRGDPT(-2)	-.17866	.065314	-2.7354[.012]
CONST	.59742	.59742	3.2728[.003]

R-Squared .95854 R-Bar-Squared .94535 S.E. of Regression .012952 F-stat.   F (7, 22)   72.6624[.000] Mean of Dependent Variable .503S   Dependent Variable .055401 Residual Sum of Square .0036903   Equation Log-likelihood 92.4805 Akaike Info. Criterion 84.4805 Schwarz Bayesian Criterion   78.8757 DW-statistic   2.4953

Estimated Long Run Coefficients using the ARDL Approach B) ARDL (1, 0, 0, 0,2) selected based on Schwarz Bayesian criteria			
Regressor	Coefficient	Standard Err	T-Ratio [Prob]
LNIN	.018122	0.151	-.1963[.106]
LNRMIT	-0.2182	.01002	-2.1225[.025]*
LNOPPt	-0.1173	.0519	2.2574[.014]*
LRGDPt	-0.137	.05074	2.703[.013]*
Constant	1.23	.01663	7.35[0.00]*

5.3.3 Results of the Long Run Relationship

To find the long run relationship among poverty, remittances, income inequality and real GDP, the test of hypothesis that the coefficients of lag variables are equal to zero based on the redundant variable test. Results of co integration tests suggested that the null hypothesis of no long run relationship is rejected, because the computed F-statistics is highly significant and Wald test

restrictions imposed on coefficients of explanatory variables of null hypothesis of at least one of coefficients are zero is rejected by using CHSQ(1) significantly . This implies that the long run relationship exist among poverty, remittances, real GDP and income inequality. We get the long run coefficients by using ARDL approach through distributive lag estimate and results reported in panel (B) of table 5.6.

From above results we can easily see that all variables are theoretically expected results to say that long run coefficients of all variables are negative. The same as to growth model, poverty model is based on the AIC and a SBC information criterion the proses is AR (1). The results indicate that, an increase in remittances can directly lead to poverty reduction in the long run. This may be due to the fact that remittances directly increase the income of poor people, smooth household consumption and ease capital constraint. The studies from this results predict that, an increase remittance at 1% the same as to reduce poverty approximately by .0213 percent.

The long run elasticity of income inequality (Gni index) is negative impact, but statistically insignificant as Taylor et al (2005) and Brown &Jimenez (2008) in eastern part of Mexico. The results suggest that openings to trade have positive and significant impact on poverty reductions of Ethiopia as many theory of review hypothesis in most developing countries and its coefficients is (-.11730). On the other hands perhaps trade liberalization over the period improved the income distribution, thus making the poor as good as possible as a result of the adoption of skilled – based technical methods in response to increase national competition. Thus in the long run, openness to trade shrinks the poverty situation in Ethiopia (Gloria Owlafe, 2008).

Finally, The results indicate that, an increase in economic growth leads to reduction in poverty incidence which is consistent with analysis of poverty reduction (Adam and page, 2005). That is to say, in the long-run, an increases in real output has the potential of improving poverty in Ethiopia. The results show that the coefficient of real *GDP* is statistically significant at 5% percent level, indicating that if the country were to increase her *GDP* by 1 percent, poverty incidence will reduce by 0.137 percent.

5.3.4 Short Run Dynamics

The same as to growth model, variables in the poverty model are co-integrated provides support for the use of an error correction mechanism (*ECM*) representation in order to investigate the short run

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dynamics. Estimation results based on SBC criteria, since R^2 is70% indicates that the degree of variations between explanatory variables is very high and also since the given R^2 is less than Durbin Watson (of its values >=2). Finally, we can conclude that the model highly is verified (Gujarat of, 2003).

From above output of micro fit4 the studies suggests that the immediate impact of changes in real *GDP* on poverty reduction is positive. That is to say, the coefficient of the real *GDP both in lags and normalized form* has the theorized negative sign specifying a positive impact on poverty reduction, in the short run which is consistent with the long run results; the coefficient is highly significant at 5%. This means that in the short run, growth in economic activities in Ethiopia has the potential of reducing poverty. The short run impact of remittances on poverty is positive, but insignificant as AbdhulAhan (2008) which might be due to the transaction cost associated with migration. The short run impact of poverty with respect to income inequality (Gini coefficient) is positive and significant which is according most of the theorized review. This positive and significant relation indicate that at a given rate of economic growth, poverty reduces more in low inequality countries, as opposed to high inequality countries, so the income inequality variable is positive and significant (Adam and Page, 2005).

When tuning to the openings has negative short run impact and insignificant , This result however, suggests that, perhaps trade liberalization in short run worsened the income distribution, thus making the poor poorer as a result of the un able to acceptance of unskilled – based technical methods in response to increase foreign competition (ibid).

Table 5.8 ARDL –VEC mechanism for growth model

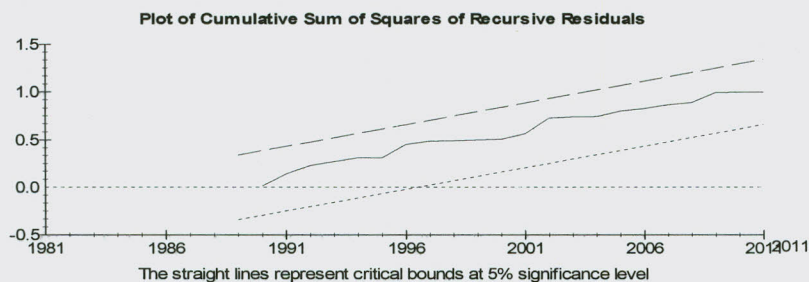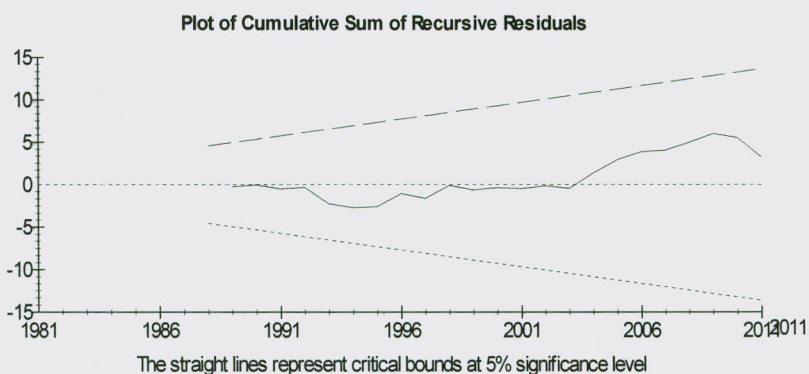| Error Correction Representation for the Selected ARDL Model ARDL (1, 0, 0, 0, 2) selected based on Schwarz Bayesian Criteria Dependent variable is LNPOVt			
Regressor	Coefficient	Standard Error	T.Ratio[p]
DLNINT	0.088511	0.073836	-.11987[.006] **
DLNRMIT	-0.010395	0.050186	-2.0712[.050]
DLNOPPT	-0.057316	-0.057316	-1.7769[.089]
DLRGDPT	-0.050982	0.53036	-.96129[.016]**
dLRGDPt(-)	-0.050982	0.065314	2.7354[.012]**
CONS	0.5973	0.18254	3.2728[.003]**
ECM (-1)	-0.48983	0.15437	-3.1639[.004]**
List of additional temporary variables created: DLNPOVTt = LNPOVTt-LNPOVTt (-1) DLNINt = LNINt-LNINt (-1) DLNRMITt = LNRMITt-LNRMITt(-1) DLNOPPTt = LNOPPTt-LNOPPTt(-1) DLRGDPt = LRGDPt-LRGDPt (-1) dLRGDPt(-1) = LRGDPt (-1)-LRGDP (-2) Constant = CONSTANT-CONSTANT (-1) ECM = LNPOVT + .018122*LNIN + .021282*LNRMIT + .11735*LNOPPT + .13671*LRGDP -1.2232*CONS			
R-Squared .70600 R-Bar-Squared .61700 S.E. of Regression .012952 F-stat. F (6, 23) 2.5062[.002] Mean of Dependent Variable -.0062102 S.D.of Dependent Variable .014637 Residual Sum of Squares .0036903 Equation Log-likelihood 92.4805 Akaike Info. Criterion 84.4805 Schwarz Bayesian Criterion 78.8757 DW-statistic 2.4953			

The (**) indicates the significance of the given variables 95% significance level

Finally, the error correction term $ECMt-1$ which increases the speed of adjustment to restore equilibrium following shock has the theoretically expected negative sign and is statistically significant at 5 percent, thus strengthening the attainment of a long run equilibrium relationship among the variables. The size of the error correction term (-0.49) precisely indicates that around 49% of the deviation from the long run equilibrium is corrected every year. This suggests a relatively high speed of adjustment from the short run deviation to the long run equilibrium poverty levels.

5.2.4 Testing for structural break and model diagnostic

By applying the same procedures as growth model, The methodology used in poverty model based on the cumulative sum (*CUSUM*) and the cumulative sum of squares (*CUSUMSQ*) tests proposed by Brown et al (1975). Figures 5.2 shows that both the *CUSUM* and *CUSUMSQ* plots lie within the 5% critical bound thus providing

Figure 5.2 plot of *CUSUM* and *CUSUMSQ for poverty model*

Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Plot of Cumulative Sum of Squares of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Evidence that the parameters of the model do not suffer from any structural instability over the period of study.

Finally diagnostic tests were conducted on the ARDL to confirm the presence of serial correlation, normality of the residuals, model specification as well as heteroscedasticity

Table 5.9 ARDL-Poverty model Diagnostic tests		
Test Statistics	LM Version	F Version
* A: Serial Correlation	CHSQ (1) = 3.78[.052]	F(1, 21)= 3.0363[.096]
* B: Functional Form	CHSQ (1) = 1.183[.277]	*F(1, 21)= .86268[.364]
* C: Normality	CHSQ(2)= 140.341[.050]	Not applicable
* D: Heteroscedasticity	CHSQ(1)=1.8712[.171]	F(1, 28)= 1.8626[.183]
Wald Statistic	CHSQ(1)= 30.4801[.000]	-
A: Lagrange multiplier test of residual serial correlation B: Ramsey's RESET test using the square of the fitted values C: Based on a test of skewness and kurtosis of residuals D: Based on the regression of squared residuals		

Note Wald test retractions the same procedure is applied like growth model. Coefficients of Wald test restrictions are imposed the same as growth model.

Table 5.10 ARDL-VEC model diagnostic tests		
Test Statistics	LM Version	F Version
* A: Serial Correlation(ols case)	CHSQ (1) = .8401[.359]	F(1, 23)= .64068[.432]
Wald statistics	CHSQ(1)= 6.6607[.010]	F(2, 21)= .090236[.914]

The results of table 5.11 indicates that the null hypothesis of there is serial no correlation is un able to reject the null at 95% confidence level .On the other hand Wald restrictions imposed on null of at least one of the coefficients of explanatory variables are zero is significantly rejected at 95%confidence level.

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CHAPTER SIX

Conclusions and policy recommendations

6.1 Conclusions

The study mainly focused on the importance of migrant's remittances inflow and its Influence for economic growth and poverty reduction in Ethiopia for the period of 1980 to 2011. The study employ modern time series econometric techniques such as stationarity tests, cointegration and error correction mechanisms by using the ARDL approach. Further diagnostic tests are involves to investigated conditional hetrosecadistics problems, autocorrelations, stability and normality conditions are checked.

The researchers analyze the impact of remittances inflow on economic growth and poverty. It is found that remittances effect economic growth positively and significantly by increasing real private investment and fixed capital accumulation which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households by improving human capital. Findings emerge from this study that remittances have insignificant short run impact on poverty reductions due transactional cost of migrations. however, a strong and statistically significant long run impact on poverty reduction, through the direct increase in the incomes of the poor, thus smoothening household consumption and easing capital constraints and growth in Ethiopia .

The finding of this study suggests that international migration of lab our has substantial potential benefits for poor people in developing countries like Ethiopia. In the long run the remittance inflow can leads to sustainable growth and welfare improvement and up gradation of poor households as the impact of remittance broaden and enlarge over the Time.

It was found that remittance flows to Ethiopia tend to act counter-cyclically, that is, they increase in times of economic distress which consistently work effectively as an informal stabilization fund.

6.2 policy recommendations

With regards to policy implications, the empirical results provide helpful information for policy formulation and implementation.

The policy inference is that remittances should not be regarded as the key instrument on equivalence with traditional growth engines like exports and foreign direct investment (FDI) in promoting long-term economic growth and country's wealth.

However, while remittances could have significant impact on economic growth and a long run significant impact on poverty reduction as the studies hypothesized, governments in destination and origin countries should aim to sharpen the impacts of such international flows; Two key policy systems are needed to sharpen such impacts. Firstly, government needs to have the policy scheme that aims to enhance the amount of remittances, particularly through formal channel. There is evidence that around 50 percent of remittances are under recorded and through informal channel (World Bank, 2006). These informal networks of money dealers commonly offer speedier and cheaper means of transfer than going through the formal channels. However, a number of concerns have been expressed with respect to the operation of the informal fund transfer system, ranging from financial running, money laundering, potential links with terrorist funding, to macroeconomic consequences with respect to inappropriate exchange rate movement tax collection. Transaction costs in sending remittances remain high (IMF, 2005 and World Bank, 2006) so government should lower the costs and any barriers of official remittance channels to enhance the amount of remittances.

Although there are other policies such as financial incentives offering premium exchange rates and interest rates to be used for enhancing the amount of remittances, these policies seem to have ambiguity impacts and limitations. Thus, to reduce such transaction costs, the government should promote competition and remove barrier to entry in the remittance market. For example, capital requirements on remittance services should be lowered. Formal financial intermediaries networks

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should be widened by allowing domestic banks to operate overseas, and stimulating the participation of microfinance institutions and credit unions in providing low cost remittances services. Government should also support for the introduction of technology in payment systems. In particular, to increase the official remittances of the poor, partnerships between leading banks and the government post office network and banks without extensive branch networks in rural areas needed to be implemented.

Secondly, policy scheme should be emphasized toward how remittances will be used for productive activities. According to our econometric estimates, physical and human capital investments are two key channels through which remittances could generate the positive effects on economic development. Measures that encourage remittances to such investments would enhance its developmental impact. They can be undertaken in various forms. For example, the government could develop appropriate training or education programs to assist returning migrants or remittance receipts in making effective investment decision. In addition, the appropriate infrastructure should be developed to generate favorable investment climate and to complement investments out of remittances. Mexican experience would be a good example where their migrants form hometown associations raise funds for their communities of origin and spend to improve their infrastructure. Their contributions are matched by federal and state government.

Over and above such two key important policy schemes, the government also needs to have better data collections in terms of both magnitudes and sources of remittances. Data on remittances sometimes are scattered across overlapping categories and institutions. Remittances are often misclassified as export revenue, tourism receipts, non-resident deposits, or even foreign direct investment (*FDI*). Many types of formal remittances flows go unrecorded, due to weakness in data collection. Without such improvements, it will be difficult for policy makers to precisely examine and evaluate the impact of remittances.

6.3 Practical Limitation and further of Research

The major limitation the study encountered, typical of such studies in developing countries, was quality and limited availability of data. Furthermore, most of the time series data were not in quarterly format and therefore variables such as real *GDP*, external remittances, human capital etc had to be used in their annual form. An attempt to extend the data length to 20012/13 or further was

constrained by unavailability of these macro series from domestic official sources as the researcher had to fall on mainly foreign sources such as the World Bank, IMF, among others at a tremendous financial expense.

Thus, future studies on remittances on economic growth and poverty reduction in Ethiopia should extend the context of the present study by simultaneously estimating a robust relationship between economic growth, poverty reduction and remittances by incorporating other relevant variables such as foreign aid, government consumption, etc particularly by panel time series data.

Finally, the researcher was unable to test for endogeneity and simultaneity of the variables used in the study under the simple assumption that all the explanatory variables are endogenous. Consequently, the interpretation of the results should be done with a certain degree of caution. Hence further research should concentrate on addressing this so long as data availability improves.

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Appendexs

Apendex 1 for growth equtions

Table 1.1 bound test procedurs
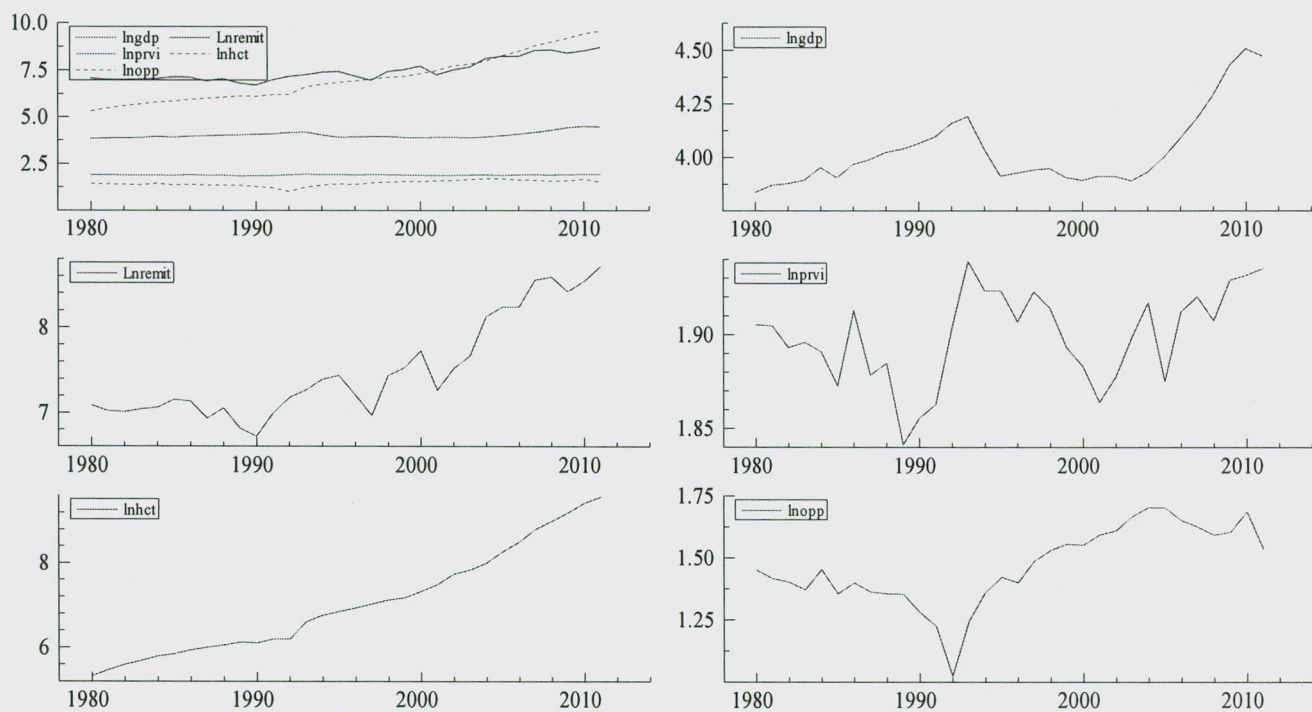
K	critical values			F-statistics(F_{rgdp} (RGDP /REMT HC, OP, RPIVt).
5	1%	5%	10%	6.03**
I(0)	3.71	2.98	2.62	
I(1)	4.74	3.67	3.45	

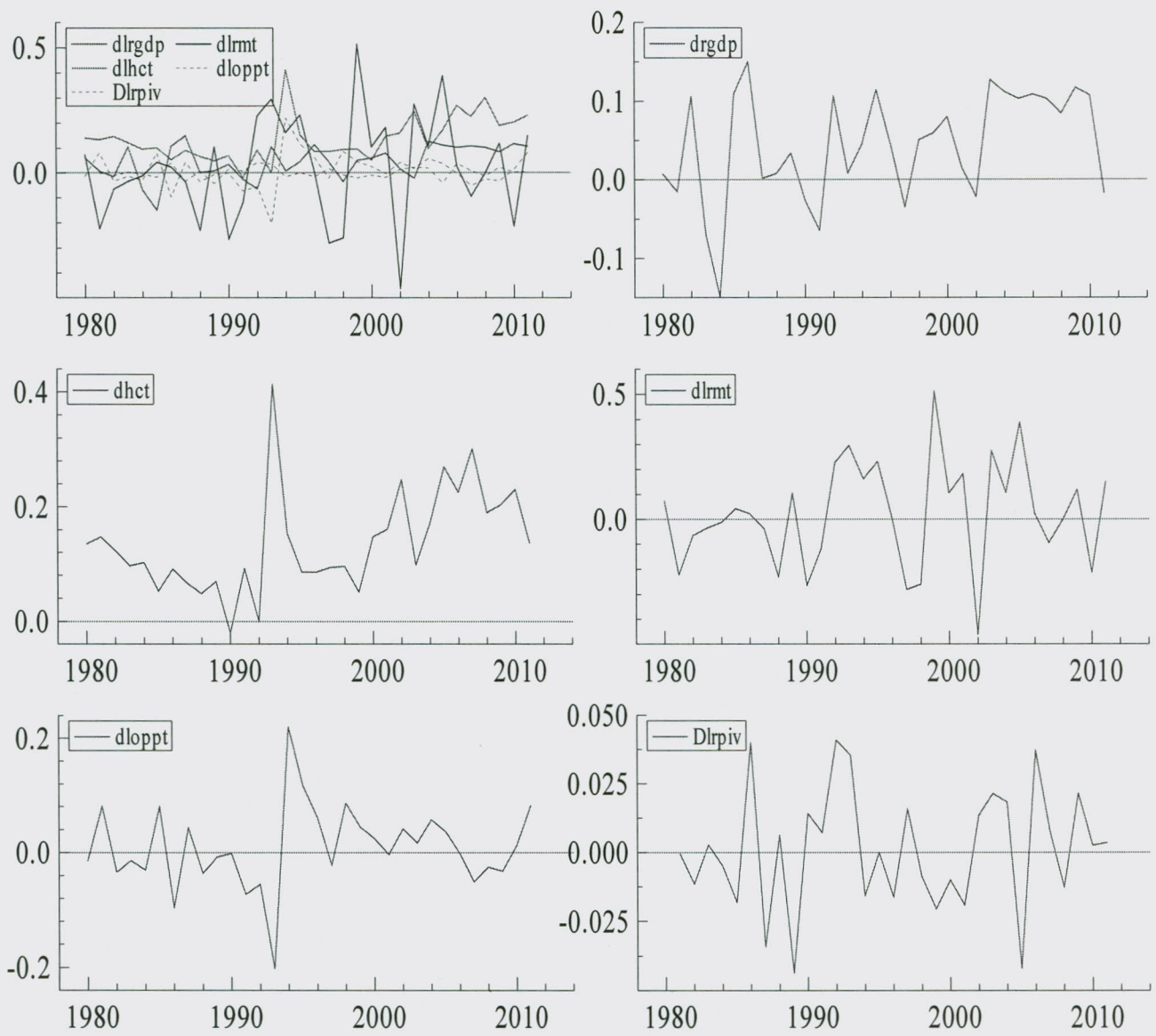*Notes*: Critical values are obtained from Narayan (2004). *** represents statistical significance at the 1% lev

K is the number of regressors

1.2   Plot of Groth equation varible at levels

Sources outer calculations from PcGive10 software

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1.3 Plot of growth variables at first differences

Sources outer calculations from PcGive10 software
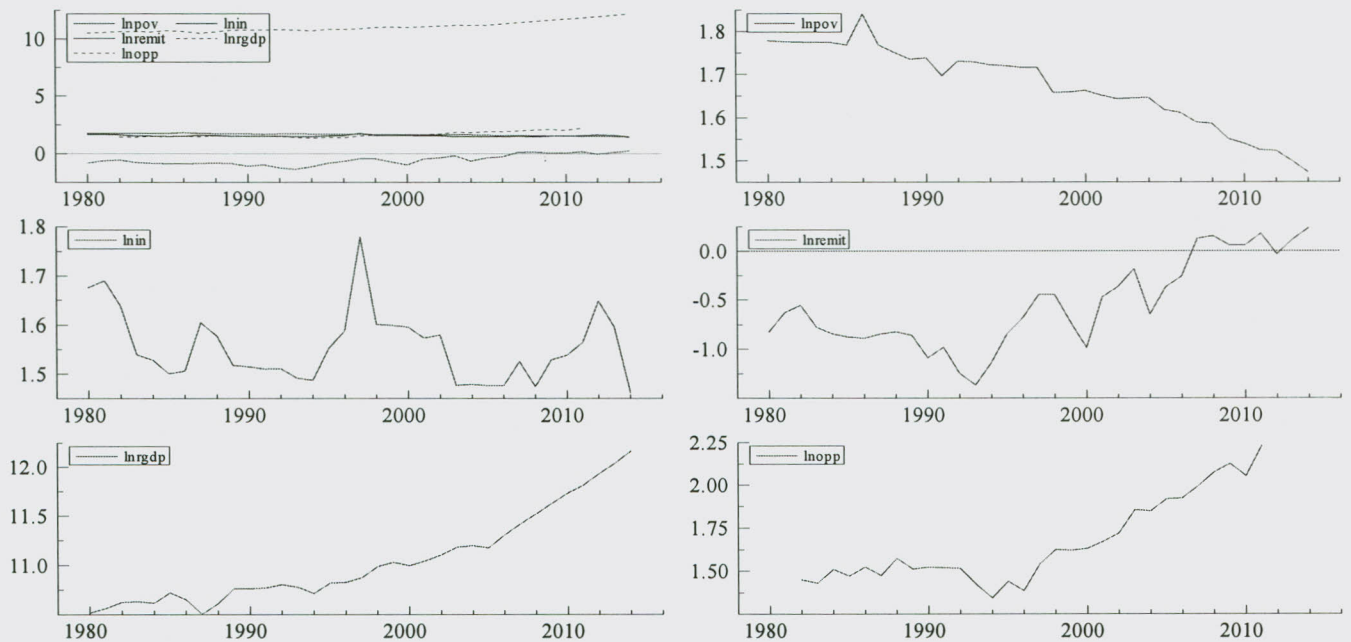
Appendices 2 for poverty equations

Table 2.1 bound test procedure for poverty equation

K	critical values			F-statistics (F_{rgdp} (pov /REMT LNIVT, OP, LNHCT).
5	1%	5%	10%	7.09**
I(0)	4.71	3.58	3.72	
I(1)	5.72	3.67	3.45	

Notes: Critical values are obtained from Narayan (2004). *** represents statistical significance at the 1% level.
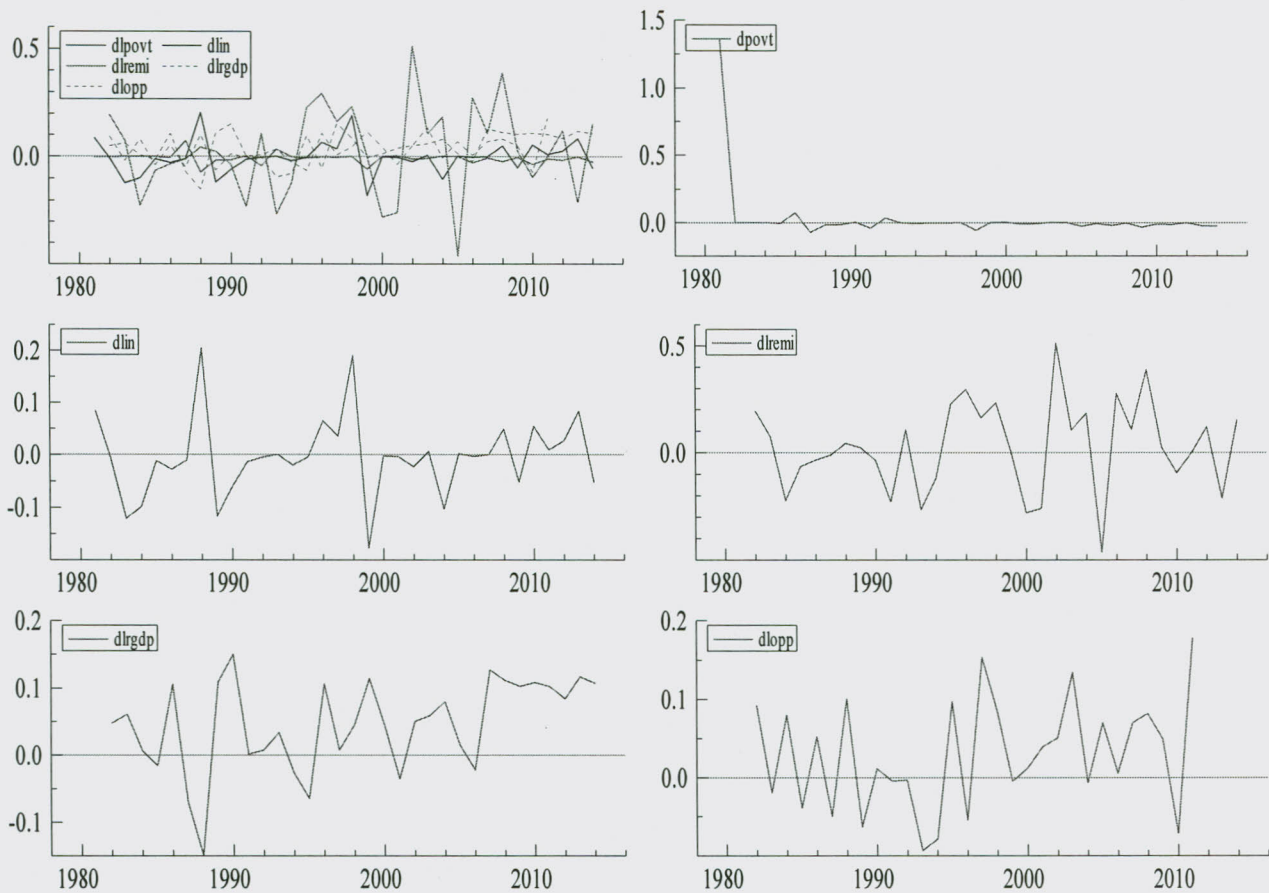
K is the number of regressors

Appendices 2.2 plot of poverty equations at levels

Sources outer calculations from PcGive10 software

Appendices 2.3 plot of poverty equations variable at first difference

Sources outer calculations from PcGive10 software