



**ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

*The Role of International Remittance on
Economic Growth in Ethiopia*

A Thesis Submitted to St. Mary's University Institute of Agriculture
and Development Studies in Partial Fulfillment for The Masters of
Arts in Development Economics

By
Abel Tenaye

January, 2019

ADDIS ABABA, ETHIOPIA

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DECLARATION

I, the under signed, declare that this thesis is my original work, prepared under the guidance of Dr. Maru Shete (Associate Professor). All sources of material used while working on this thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any type of degree.

Abel Tenaye

Signature: _____

ENDORSEMENT

This thesis has been submitted to St. Mary's University, school of Graduate Studies for examination with my approval as a university advisor.

Maru Shete (PhD)

Advisor

St. Mary's University, Addis Ababa

Signature

January, 2019

APPROVAL SHEET

As members of board of examining of the final MSc thesis open defense, we certify that we have read and evaluated the thesis prepared by Asaye Mekonnen under the title “THE ROLE OF INTERNATIONAL REMITTANCE ON ECONOMIC GROWTH IN ETHIOPIA” we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Science in Development Economics.

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LIST OF ACRONYMS

ADF	Augmented Dickey-fuller
ARDL	Autoregressive Distributed Lag
EEA	Ethiopia economic Association
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
MoFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
OLS	Ordinary Least Square
SBC	Schwartz-Bayesian Criterion
USD	United States Dollar
VAR	Vector Autoregressive
VIF	Variance Inflation Factor
WB	World Bank

ABSTRACT

The study was carried out to find out the role of remittance on economic growth in Ethiopia from the period 1980 to 2016 along with other macroeconomic variables. Both descriptive statistics and time series econometrics model were employed to analyze the data. The study employed an Autoregressive Distributed Lag (ARDL) model to co-integration in order to investigate the long and short-run relationship and Error correction model to estimate the short run effect. The finding indicates that remittance had a negative and significant effect on growth rate; however, it had a positive effect in the short run. The analysis further revealed that openness to trade had a positive effect in long run; however, it had a negative effect in the short run. Contrary to this, real private investment had a positive effect on real growth both in the long and short run. On the other hand, expenditure on human capital didn't have significant effect on real growth. Therefore, in order to sustain long run growth apart from working on remittance and human capital, the government should design appropriate policies that results in the efficient use of resources contributing to economic growth through increasing the remittance flow and proper management of variables that could contribute to national output.

Keywords: *Remittance, Economic Growth, Error Correction Model, ARDL, Bound test, Ethiopia*

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Enhancing and sustaining growth rates and pinpointing the variables that could have a great effect on promoting growth are considered to be one of the most essential topics that have concerned several scholars and policymakers in both developing and developed countries. One of these variables that we are concerned about in this paper will be the effect of remittances with the help of other macroeconomic variables such as; FDI, investment and openness to trade on enhancing any country's economic growth.

International migration has become a strategy for individuals and/or families in developing countries such as Ethiopia to cope with poverty and economic crisis. Migrants attempt not only to improve their own livelihoods but send a considerable share of their earnings to their families in the region of origin as remittances. The importance of international migration is evidenced by the numerous money transfer institutions and the rapid increase in international remittances. Migrants maintain a link with countries of origin through a complex network of cultural, economic, social and political relations, which can be sustained through new technologies and cheaper travel (World Migration Fact book (2011a)).

Since 1970s, remittance inflow became a phenomenon that has received much attention from considerable number of scholars, researchers and policy makers due to its importance as a source of international capital flows as well as due to its stable nature compared to other flows such as; FDI, foreign loans, etc. In 2009, in some countries remittances have become as large as FDI, and in a large group of developing countries remittances represent a resource inflow that often exceeds a variety of other balance of payments flows (IMF 2009). Remittances represent a major part of international capital flows, surpassing FDI, export revenues, and foreign aid in many developing countries (Giuliano and Ruiz-Arranz, 2005).

On their way to fostering prosperity, most developing countries are characterized by shortage of external capital flow, which is an important factor that promotes investment and accelerates economic growth. In addition to official development assistance, other official aids and foreign direct investment, remittances are considered an important way to increase the amount of foreign capital inflow. The World Bank (2011) concluded that the total amount of remittances received by developing countries in 2010 was about US\$325 billion, which is more than double the amount received in 2004 (US\$159 billion). Remittances offer additional advantages compared to other sources of financing. First, remittances are the second largest amount of foreign capital inflow after FDI, surpassing official development assistance and aid received, as well as other sources of external capital (World Bank, 2011). Second, remittances received by developing countries are stable. They have continued to increase each year, with the exception of a decrease in 2009 when the amount of remittances was US\$307 billion compared to US\$325 billion in 2008 (World Bank, 2011). Third, remittances are underestimated because the amount flowing reported does not consider transfers through informal channels (such as family and friends).

As Kanu and Ozurumba (2013) quotes between 1980 and 1991 more than 75% of Ethiopians skilled workforce migrates to other countries. For numerous developing countries, including Ethiopia the inflow of remittance becomes an increasing and important growing fund to their economy. According to data of the World Bank, from the total remittance the country received in the past three decades, more than 87% of remittance inflow was gained in the last two decades. Currently where the emerging economies increased while the overall inflow of FDI declined the inflow of remittance remained increasing and supporting the people's livelihood in reducing poverty and meeting their demands (United Nation Economic Commission for Africa, 2013, African Banker, 2013). In line with this the proposed researcher wants to assess the role of remittance on economic growth of the country Ethiopia. The short run and the long run relationship between remittance and economic growth in the country also studied in this proposed title.

1.2 Statement of the Problem

International migration, in the Ethiopian context, had shown dramatic increase starting from the late 1970's, which was the result of the political instability and revolution at that time (Alemayehu et al., 2011; Dejene, 2005). Gradually, out migration which was predominated by the urban elite for political reason in the previous periods, started to take economic dimension and became the aspiration of

most urban people (Alemayehuet al.,2011).

One of the major insights in relation to international migration in the Ethiopian context is the increasing amount of remittance sent to country of origin. World Migration Fact book (2011a) puts Ethiopia 8th among the top remittance receiving countries in SSA. According to the data from National Bank of Ethiopia, the amount of remittance inflow recorded in 1996/97 was around 855 million Birr. This figure increased to 9.3 billion Birr in 2006/07 fiscal year. Recently, private individual transfers, according to the same source, have grown tenfold from USD 177 million in 2000/01 to USD 1.8 billion in 2008/09 (Emertaet al., 2010). This dramatic increase has arisen for the most part due to the increasing stock of Ethiopian migrants across the globe.

Although some researchers have identified the negative effect of remittances on the receiving countries' economy, however; other researchers have identified the remarkable positive effect of remittances on several countries in several areas and in several economic perspectives. For example, in the financial perspective, many researchers have proved the positive relationship between remittances and the increase in home country's creditworthiness (Ratha, 2013; Iqbal and Sattar 2005). Since the foreign exchange inflow from migrants increase the home country's ability to secure more favorable terms of debt service as lenders perceive a lower risk of default in a sense that countries with high remittances inflows can borrow more from international institutions.

In terms of access to the remittance sector operation ID requirements may limit access of poor households, however the problem is not sever in Ethiopia as most operators use about 4 types of IDs. Networks in urban/rural areas are very limited, specially the latter. In terms of time required a remitted money to reach urban and rural recipients, we found rural areas to be more difficult to reach. Currency convertibility is also found to be one of the major problems for the formal sector operators. This (and related less transaction costs) has led most people to dependence on informal sector operators. For informal sector operators the major problems are general policy environment and cost of operation for themselves and their clients is high. Given conducive environment it is highly probable that informal sector operators could be attracted to the formal sector. Moreover, as our one case of a cooperative bank experiences shows and credit unions and cooperative bank may be more forthcoming to the sector (Geda and Tafere, 2011).

Spatafora (2005) finds that there is no direct link between per capita output growth and remittances. Meanwhile, in one of the larger cross country surveys, Chami et al.

(2003) conclude that remittances have a negative effect on economic growth across a sample of 113 countries. Several other published studies in relation to remittances have focused specifically on the alleviation of poverty rather than overall economic growth (for example, see Adams & Page 2003). Dufera and Rao, (2016) also finds out both in the long and short run remittances have a significant and negative effect on GDP.

According to Chami et al. (2003) the moral hazard problem created by remittances can be severe enough to reduce economic activities. From the descriptive part of the study, the negative correlation between remittances and fixed investment supports the econometric results and in the long run as the flow of funds increase, due to the moral hazard problem the working people diverted to be unproductive and most of the remittances spent on consumable goods and services. Moving to the role of remittances in poverty reduction, researches have proved the positive impact of remittances in decreasing the poverty rates in the recipient country. Since, according to Ratha (2013), remittances increase household incomes and are therefore a powerful anti-poverty force in developing countries, for the fact that remittance receivers can identify their own greatest needs and can allocate the remittance income accordingly. The study asserted that households that receive remittances are financially better off across multiple dimensions such as; high income levels, high levels of consumer spending and lower incidences of extreme poverty in relative to other households that don't receive remittances (Ratha, 2013). In addition, one cross-country study of 71 developing countries found that a 10% increase in per capita official international remittances would produce a 3.5% decline in the share of people living in poverty (Ratha and Timmer, 2013). For example, in Nepal, a remarkably increase in remittances was responsible for one third to one half of the overall reduction in headcount poverty rate in the country, which have declined from 42% in 1995-96 to about 31% in 2003-04 (Ratha and Timmer, 2013).

Given the possible impact that these remittances could have on the growth and development of developing countries, a number of studies have been carried out to test the impact of remittances on the receiving country's economy and the findings are mixed and inconclusive. For example, Taylor (1992) and Faini (2001) found a positive association between remittances and economic growth. Taylor (1999) also argued that every dollar Mexican migrants send back home or bring back home with them increases Mexico's GNP from anywhere between US\$2.69 and US\$3.17. Researchers such as Jawaid and Raza (2012); Waheed and Aleem (2008); Iqbal & Satar (2005); Giuliano & Ruiz-Arranz (2009); World Bank (2006) who have proved that there is a strong positive relationship between remittances and economic

growth. And those remittances could increase economic growth directly or indirectly either through reducing output volatility or through speeding up the development of the financial sector.

Conversely, researchers (see for example, Chamiet al., 2005 and Burgess and Haksar, 2005) stated that there is a negative relationship between the rate of growth of remittances and the rate of economic growth. Wakayama (2011) has proved that there is no relationship between the two variables.

In addition to the inconclusive evidence, studies have tried to identify the relationship between remittance and economic growth based on cross-country data rather than on a specific country environment to test this relationship. This research paper tried to fill this gap by using an econometric model, which helps to analyze the impact of remittance along with other variables on growth of GDP for a recipient country, in this case Ethiopia.

Therefore, this study mainly focuses to test the relationship between remittances and Ethiopian economic growth along with the help of other macroeconomic variables like investment, openness to trade and FDI. And after testing our main hypothesis in this study, which is the relationship between remittances and economic growth.

1.3 Objectives

1.3.1 General Objective

The main objective of this study is to examine the role of remittance on economic growth in Ethiopia.

1.3.2 Specific Objectives

The specific objectives are:

- To identify the causal relationship between remittance and economic growth in Ethiopia
- To identify the main trends of remittance and GDP

1.4 Research Questions

- What is the structure and trend of remittance flow in Ethiopia?

- Does remittance spur economic growth in Ethiopia?
- What is the direction of causality between remittance and economic growth in Ethiopia?

1.5 Significance of the Study

Migrants those send remittance from abroad may 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, will contribute significantly to the literature by providing new and robust evidence on remittance growth relationship and poverty alleviation in Ethiopia under consideration using 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 vital.

1.6 Scope and Limitation of the Study

The scope of this study will be to examine the role of remittance on economic growth in Ethiopia using the data for the period 1980 to 2016.

The major limitation of the study arises from the absence of accurate data regarding remittance inflow. This is due to failure of applying the standard definition of remittance provided by IMF balance of payment statistics. Most central banks use remittance data reported by commercial banks, but leave out flows through money transfer operators and informal channels. This in turn creates a huge underestimation of remittance inflow and, hence, data available.

The other most frustrating challenge for this work is that there is huge inconsistency of data from different organizations such as NBE-which is in most cases similar to MoFED, WB and IMF. Of course, huge informal flows of remittances which are not recorded by official authorities have made data inconsistency a more general problem. In order to avoid such inconsistency, attempt is made to stick to the same sources for the same group of data as much as possible.

1.7 Organization of the study

The study organized into five chapters. Chapter one deals with the introductory part of the topic whereas chapter two is devoted to both the theoretical and empirical

review on the impact of the remittance on poverty and economic growth. The data and methodology to be employed in the thesis are deal with under chapter three and the econometric results and discussions given in chapter four. Finally, the conclusions and policy recommendations were drawn in chapter five, depending on the findings of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical Literature

2.1.1 Definition of Remittances

Before getting into details on how remittances could play an important role in enhancing the economic growth and the effect of these remittances in the current economic situation, we have to define first what we mean by remittances. Remittances in the general terms are the transfer of money by a foreign worker to his/her home country or in other words the remitted money, usually cash transfers and goods that migrant workers send back to family at their home country (Zohry, 2011). In addition, remittances are not only money transferred to home country but rather value-added money since the migrants usually have an idea on the best way to use this money (Ratha, 2009). Tewolde (2005) remittance as monetary and non-monetary items that migrants earn while working abroad and sent back to their families living in their homeland.

Besides, remittances act as insurance against economic adversity since migrants usually send more money when their family are facing any financial problems or experiencing hardships and that's why remittances tend to be a stable and often "countercyclical" source of foreign exchange earnings (Ratha, 2009). According to the International Organization for Migration, migrant remittances are defined broadly as "monetary transfers that a migrant makes to the country of origin" and in other words remittances are "personal, cash transfers from a migrant worker or immigrant to a relative in the country of origin" (IOM, 2010). Remittances can also be defined as "funds invested, deposited or donated by the migrant to the country of origin" and the definition could be expanded to include in-kind personal transfers and donations (Ibid, 2010). Besides, Remittances could actually take different forms such as; investments, pension and social security transfers from destination countries where migrants obtain the right to pensions, intra-family transfers, personal deposits

and it could be as well donations made by migrants in the form of either long term development contributions or crisis relief (Ibid, 2010).

The literature on remittances identifies three theories to explain flow of remittances. IMF (2010) has classified remittances into three variables; *workers' remittances*, *compensation of employees*, and *migrants' transfers*. Workers' remittances are further classified as a "current private transfers from migrant worker's resident in the host country for more than a year irrespective of their immigration status to recipients in their country of origin", while compensation of the employees is usually called for the income of migrants who lived in the host country for less than a year (Ibid,2010). On the other hand, migrant transfers are defined as the "net worth of migrants who are expected to remain in the host country for more than one year that is transferred from one country to another at the time of migration" (Ibid,2010). In this study, the term remittance is conceptualized as the aggregate sum of the pre-stated variables.

2.1.2 Theories of Remittance

After defining remittance, we will discuss in this part the theories that have tackled the reason behind sending money on a periodic basis to the country of origin and why from theoretical perspective seems to be a stable source of foreign currency to the recipient country.

The three identified theories to explain the flow of remittances are; Pure Altruism, Pure Self Interest and Tempered Altruism which is also referred to as Enlightened Self Interest. Most discussions in the literature are centered on the first two of them. These theories illustrate that remittances are sent mainly as a result of pure altruistic and self-interest motives (de Haas, 2007:7; Schiopu & Siegfried, 2006:8; Hagen-Zanker & Siegel, 2007:4; Lucas & Stark, 1985:902). The literature on remittances is, however, conflicting when it comes to the question of determining which of the two motives listed above better explains the increased flow of remittances. Both altruistic and self-interest motives have been argued to be factors responsible for the increased or decreased flow of remittances. Sayan (2006:5) challenges the idea of viewing altruism as the only motive for remitting. He asserts that "*remitting is a multifaceted behavior*" hence it involves many other explanations besides altruistic and self-interest motives.

Pure Altruism theory

The theory of altruism revolves about the concept of benefiting others in which certain criteria should be present to call any behavior an "altruistic behavior" (Piliavin & Charng, 1990). For example, this behavior must benefit another person, must be performed voluntarily, must be performed intentionally, the benefit must be the goal by itself and must be performed without expecting any external reward (Ibid, 1990). This could be applied on the migrants, our main concern in this paper, in a sense that the migrants care not only for their own utility but also for the utility of the household in the origin country (Ibid, 1990). That's why we can assume based on the theory that the level of remittances increases with the migrant's income and decreases with the recipient's income. In addition, the "altruism" motive shows that having an emotional attachment to the household in the country of origin is so crucial so that remittances reflect a kind of commitment that the migrants have towards their families (van Wey, 2004).

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 dis-economies 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 (Lucas and Stark, 1985).

Pure Self Interest Theory

However, other researchers have tested the issue of the migrants sending money to their households through applying the theory of enlightened self-interest (Van Wey, 2004). This theory is based on the assumption that self-interest is the prime and the main motive behind remittances in a sense that what "appears as mutual altruism between the family and the migrant could just as well be enlightened self-interest" (Ibid, 2004). For the fact that some families may deprive the migrant from his rights to future solidarity, inheritance as well as his right to return to the households

after the migrant's retirement if the migrants don't remit money to his family in the country of origin (Lucas and Stark, 1985). That's why remittances could be seen as self-interest benefit rather than altruistic one.

Besides, if we take the intensions of the migrant from self-interest perspective, we could see that remittances will have a negative effect on the emigration intentions to households living behind since remittances are perceived to the households as an income and insurance constraints so that there is no need for additional members to emigrate (Dalen and Fokkema, 2005).

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 aggravates the extraction of human capital which then leads to the development of passive, nonproductive and remittance dependent societies in developing countries. Besides the brain drain syndrome, the massive departure of active segment of the population causes acritical shortage of labor, depriving poor communities/countries of their most valuable work force (Lipton, 1980; Rubenstein, 1992).

Lipton (1980) further argues that because it is, generally, not the poorest that 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 more on conspicuous consumption, and "consumptive" or nonproductive 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).

Remittance Pluralist Theory

These schools of theory are 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 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.

Asmelash (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, and increasing human capital by increasing school enrollments especially for children's of home countries which is also supported (Ibid).

2.1.3 Economic Growth Theories

Most of the theories and researches have tackled economic growth as a dependent variable to any input economic factors that could have either direct or indirect effect on any country's growth, on the contrary to the remittances, which the researchers have tackled it as an independent variable.

One of these theories is the canonical model stated that "an economy has a unique and stable growth path determined by the growth of the labor force and of technical progress, with the latter usually assumed to expand at a regular, if unobserved, rate" (Solow, 1956). Another theory that have tackled growth is Arrow's endogenous theory of the changes in knowledge in which growth occurs mainly through the learning process, which is actually resulted from experience. This experience could actually take place as a function of cumulative gross investment since from the researcher perspective "each new machine put in use is capable of changing the environment in which production takes place, so that learning is taking place with continually new stimuli" (Arrow, 1962). Besides, this theory has stated that economic

development is basically a circular and cumulative causation process which tends to “award its favors to those who are already well endowed and even to thwart the efforts to those who happen to live in regions that are lagging behind” (Ibid, 1962). In other words, any country’s potential for growth is possible not when it is backward without qualifications but rather when it is technologically backward but socially advanced and this only could happen through having skilled human capital, which could only occur through realizing the important role of schooling. From this we could see how the researchers have linked between the role of education and its impact on economic growth.

Other theories were done to tackle the economic growth variable such as; Neoclassical theory. Neoclassical theory is, “the level and distribution of the national product based on the social endowments of production factors such as; labor and capital, technical conditions of production, and consumer preferences” (Cesaratto, 1999, page 773). Besides, in reference to the capital accumulation, economic growth was regarded as “Endogenous” from neoclassical view since it depends on the community choice between saving (source of capital) and current consumption (Cesaratto, 1999).

Other models have tested the relationship between saving as one of the most remarkable variable from researchers’ perspective and its impact on economic growth through several models such as; Solow’s model. This model showed that market forces have the power to adjust “warranted rate” in an economy and provide entrepreneurs to hold correct expectations, given that that the economic growth is equal to the sum of the growth rates of the labor force as well as the technical progress, which was independent of the propensity to save (Ibid, 1999). Solow’s model have concluded that there is a relationship between rise in the savings rate that drives from full employment income positively affects the level of per capita income and this rise in the savings rate has a positive effect on the rate of growth.

On the other hand, there are other theories that have tackled the economic growth as a dependent variable or as a result to other independent variables. For example, Greenwood and Smith (1997) have identified theoretically and empirically the effect of financial markets in developing and promoting the country’s economic growth. Since these markets from their perspective, help people to reallocate their savings into projects that are more productive as well as channel the investment capital to its “highest return uses” since they provide external funding to the enterprises and allow the “efficient pooling of risk” instead of depending on one source of funding (Greenwood and Smith, 1977). They concluded in their study that financial markets have significant impact on the economic growth development. Moreover, Frankel et

al (1996) conducted a study in which they are testing whether openness to trade leads to country's growth or the growth that leads to the development of trade by using the gravity model of bilateral trade and by using the data of 123 of East Asian countries. They have concluded in their study that openness to trade has a significant impact on growth especially in countries such as; Hong Kong, Singapore, Korea, Malaysia and Taiwan while other variables such as; investment and schooling have significant effect on growth more than openness to trade (Ibid, 1996). From this study results, we could deduct that the development of openness to trade and many other variables lead to the development of the economic growth and that's why we could see that economic growth is seen as the consequence of the growth of several other variables.

Similarly, other studies such as Edison et al (2002) have used the economic growth as a dependent variable to an independent variable, which is the international financial integration. The main aim of this study is to test the impact of international financial integration on economic growth and they used the simple ordinary least squares (OLS) regressions, two-stage least squares "instrumental variable estimator within the purely cross-country context" and the generalized method of moments (GMM) to avoid biases associated with "purely cross-sectional estimators" to be able to test this relationship (Ibid, 2002). The results have showed that international financial integration does not foster the economic growth in the tested countries even when the researchers controlled for other variables such as; economic and financial features. Besides, there are other studies such as; Barro (2000) study was conducted to test the relationship between income inequality and the economic growth and investment by using an extended version of neoclassical growth model, which is "conditional convergence". The results have showed that there is a minimal impact of income inequality on growth and investment in the tested countries since high inequality benefits the growth in rich places on the expense of poor places (Ibid, 2002).

From all these models and theories, we could see that the past theories and researches have tackled economic growth as a dependent variable to most well-known independent variables especially in the classical theories and neoclassical theories such as; labor and capital and their impact on growth. Over time, we could see that the researchers have added several other independent variables such as; technology, international financial integration, inequality, education, investment, savings, R&D and their impact on economic growth.

This paper focuses on the relationship between remittances and economic growth which the researchers have tackled it heavily in their research and have done several

empirical studies to test this relationship, as stated in earlier section.

2.2 Empirical Literature

The above scholars' studies about the effects of remittance on economic growth in different ways, these studies also try to examine the role of remittance on economic growth by incorporating different economic variables in our case Ethiopia.

2.3 Conceptual Framework

The conceptual framework shows how the dependent and independent variables are related; accordingly, this research had one dependent and four independent variables, where GDP is the dependent variable; whereas remittance, human capital, investment and openness to trade are the independent variables.

The dependent and independent variables are related in the following way shown on the conceptual framework (*figure-2.1*).

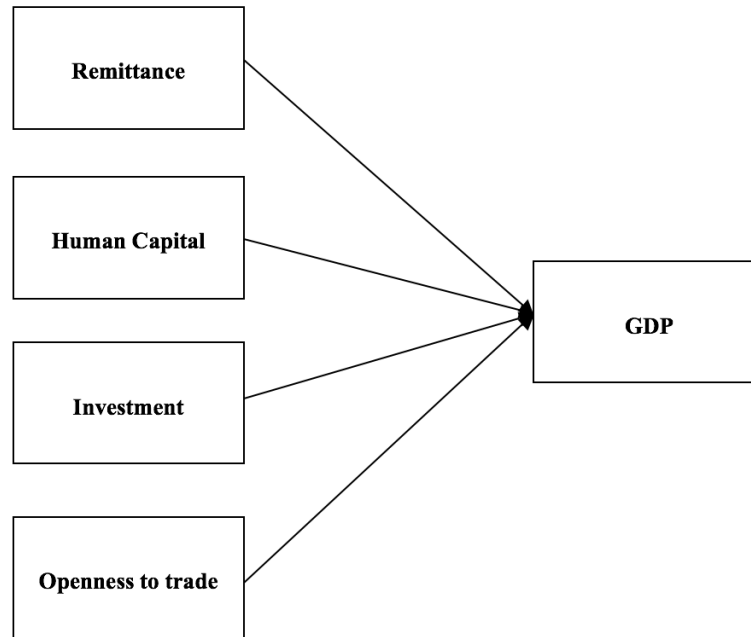


Figure 2.1: *Conceptual Framework*

CHAPTER 3

RESEARCH METHODOLOGY

This part of the study gives details on how the research activities were carried out. Therefore, the researcher concentrates on the methods that were adopted throughout the study to accomplish the research objectives. It includes the research design, the type and source of data was used, the model specifications, estimation techniques and data analysis methodology.

3.1 Research Approach and Design

The research adopted a quantitative research approach to analysis the role of remittance on economic growth: in case of Ethiopia. Furthermore, the study employed an explanatory research design in order to achieve its objectives. It is the most appropriate design for identifying the relationships between the growth of real GDP and remittance including other macroeconomic variables.

3.2 Data Source and Methods of Collection

The study employed secondary data that were collected (1980 to 2016) from National bank of Ethiopia (NBE), Ethiopia economic Association (EEA), Ministry of Finance and Economic Cooperation (MOFEC), International Monetary Fund (IMF), World Bank (WB) dataset, the United Nation Conference on Trade and Development (UNCTAD) dataset, etc.

3.3 Methods of Data Analysis

The study used both the descriptive and econometric methods of data analysis. To analyze the data, statistical package of STATA software version 13 was used.

3.3.1 Econometrics Model Specification

To determine the impact of migrant's remittance on the economic growth of Ethiopia, a least square regression analysis was 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 relationship between migrants' remittance inflows and economic growth in the Ethiopian economies.

Growth model

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 eKweka 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.

$$RGDP = f(REM, RPIV, X) \quad (3.1)$$

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:

$$RGDP_t = \sigma + \beta_1 REM_t + \beta_2 RPIV_t + \beta_3 \ln HC_t + \beta_4 OPP_t + \tilde{\epsilon}t \quad (3.2)$$

Where all variables are defined previously except, $\tilde{\epsilon}t$, 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*.

3.3.2 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 1(0) or 1(1) or mutually integrated and not 1(2). Hence the need to test for unit root to ascertain the absence or otherwise of 1(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 determine 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

$$\Delta RGDP_t = \sigma + \beta RGDP_t + \theta J + \Delta KLMNO\#4 + Ut \quad (3.3)$$

Augmented Dickey-fuller for real GDP

Where as

$$B = 1 - \delta$$

The null hypothesis (Ho) of ADF is $P = 0$ against the alternative hypothesis (HI) of $\delta < 0$. No 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).

3.3.3 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 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).

3.3.4 The ARDL Co-integration Approach

The difference between ARDL and Johansen, any other cointegration 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 Johansen 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 general, 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 statistics (Narayan 2005; Odhiambo 2009). As Bahrnani-Oskooee (2004) explains, the first step in any co-integration 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).

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:

$$\Delta RGDP_t \sigma + {}^h_{DYT} pf \alpha :_m - JbHW + {}^h_{DYT} jfv :_{mkxlbH} W + {}^h_{TYT} f v :_{34bh} + {}^h_{TYT} 5f :_{6kkb} HW + \beta_1 REM_{t-1} + \beta_2 RPIV_{t-1} + \beta_3 \ln HC_{t-1} + \beta_4 OPP_{t-1} U_t \quad (3.4)$$

Where all variables are as previously defined and \sim is the first difference operator. The parameters a , \sim , e , 0 , and \forall denote the short-run dynamics of the model to be estimated via the error correction framework and ~ 1 , ~ 2 , ~ 3 , ~ 4 , and ~ 5 represent the long-run parameters. a 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) and Akaike 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 (3.4) 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.,

$$H_0 \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0 \text{ against the alternative}$$

$$H_1 \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0 \text{ we denote the test which normalize on RGDP}$$

$$\text{By } F_{rgdp}(RGDP/REMT, HC, OP, RPIVt)$$

Two asymptotic critical values bounds provide a test for co integration when the independent variables are $I(d)$ (where $\sim I \sim d$): a lower value assuming the regressors 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 ($PI, q_2, q_3, q_4, q_5, q_6$). 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).

$$\begin{aligned}
 RGDP_t = \sigma &+ \sum_{t-1}^t \beta_1 RGDP_{t-1} + \sum_{t-1}^t \beta_1 REM_{t-1} + \sum_{t-1}^t \beta_2 RPIV_{t-1} \\
 &+ \sum_{t-1}^t \beta_3 \ln HC_{t-1} + \sum_{t-1}^t \beta_4 OPP_{t-1} + U_t
 \end{aligned} \tag{3.5}$$

Where all variables are as previously defined; the estimation of (3.5) involves selecting the orders of the ARDL (p, q_1, q_2, q_3, q_4) 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.

$$\begin{aligned}
 \Delta RGDP_t = \sigma &+ \overset{h}{OYT} vzf9 + mywkbHW + \overset{h}{DYT} pfou :m-jbH W \\
 &+ \overset{h}{DYT} Jfv :x71BH + \overset{h}{TYT} 2fv :34 BHW + \overset{h}{TYT} v5f :6kbb HW \\
 &+ Cecmt - 1 + \beta_3 \ln HC_{t-1}
 \end{aligned} \tag{3.6}$$

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

CHAPTER 4

RESULT AND DISCUSSION

This chapter contains both the descriptive and econometrics analysis. Under the descriptive statistics the trends and overall performances of the variables of interest are presented. The statistical tools such as tables and graphs are used to describe the variables used in the model. The econometric analysis begins by testing the necessary tests such as stationary tests, diagnostic tests and bound test. After passed the necessary tests both the long run and short run models are estimated using ARDL and Error Correction respectively. After estimation has been made the interpretation and discussion are continued based on the model results.

4.1 Descriptive Result and Trend Analysis

4.1.1 Trends of Real GDP

The graph below shows the trends of Ethiopian growth since 1980's; as shown on the graph on the first 10 to 15 years the GDP or the growth of the country didn't show some significant change. However, after the year 2000 the growth rate starts to show significant changes; which indicates the growth rate increases at higher rate. Mekonnen, (2017) also mentioned that the growth rate shows some from the beginning up to the year 1990 whereas relatively consistent increment from 1991 onwards and from 2002 onwards the trend is sharply upward indicating higher rate of growth. This unprecedented high growth rate is attributed due to a combination of pro poor growth policy and state led development program and the present government implementing a development program aimed at poverty reduction through rapid economic growth and macroeconomic stability (Zerayehu 2013).

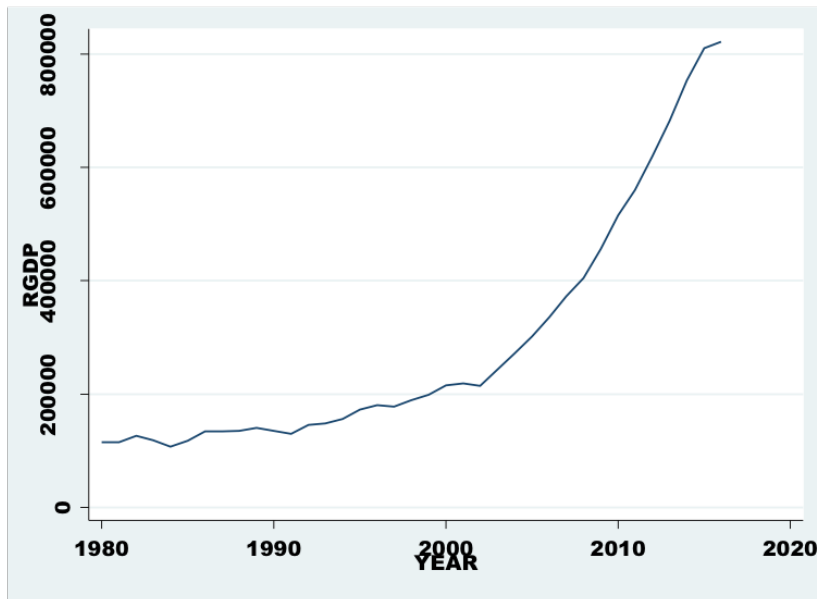


Figure 4.1: *Trends of Real GDP [Source: own competition (2016)].*

4.1.2 Trends of Remittance

A remittance is a transfer of money by a foreign worker to an individual in their home country. Money sent home by migrants competes with international aid as one of the largest financial inflows to developing countries (Wikipedia, 2018). As shown in the graph, from 1980 to 1990 the remittance of the country had a slight increasing rate; from 1990 to 2000 comparatively shows a better rate of increment. Since the beginning of the millennium the remittance rate of the country shows a significant growth rate.

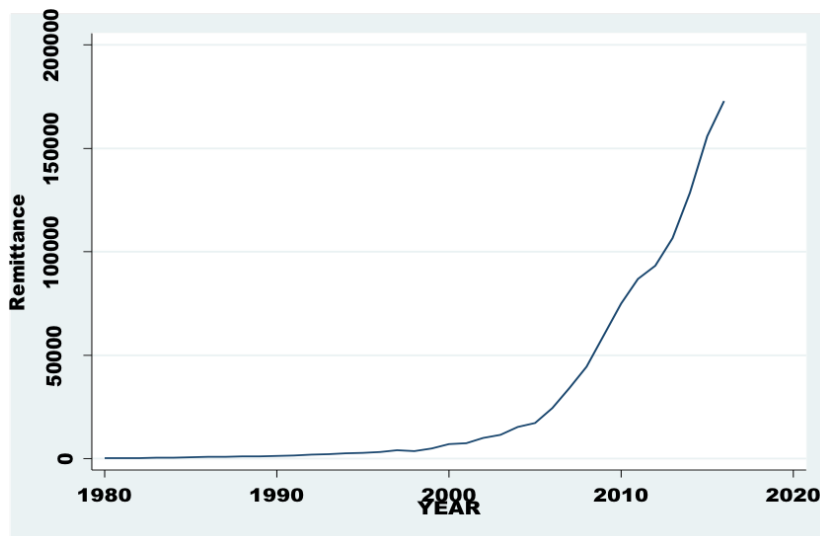


Figure 4.2: *Trends of Remittance [Source: own competition (2016)].*

4.1.3 Trends of Real Private Investment

The private investment concerns show the overall trends of counties investment for the last 37 years; the investment trend shows in the first ten years the investment trend shows some fluctuations, between the years 1990 to 2000's the trends of private investment shows a slight increasing trend; whereas from 2000 onward the real investment rate shows a significant increasing rate.

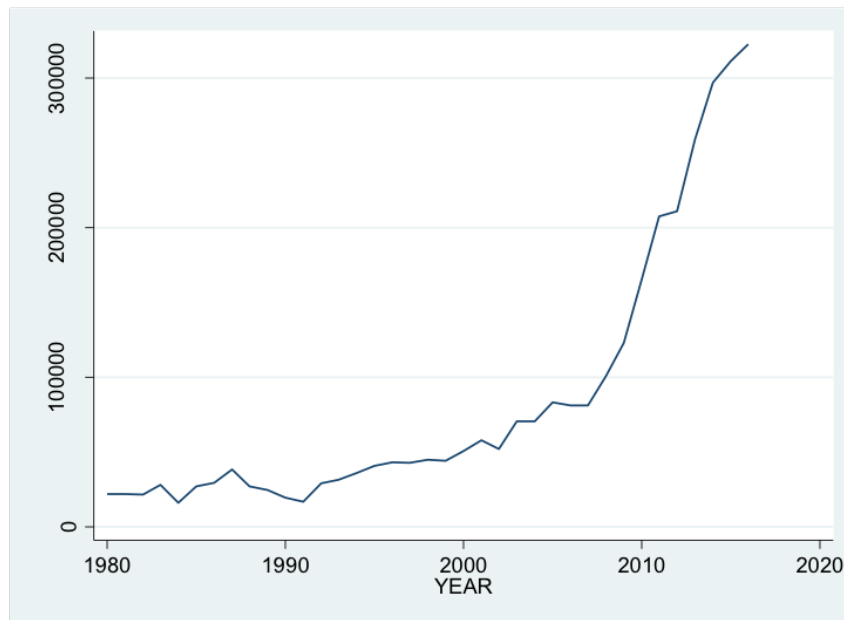


Figure 4.3: *Trends of Investment [Source: own competition (2016)].*

4.1.4 Trends of Human Capital

The human capital under this research concerns the government expenditure to health and education which considered as the expenditure to education and health to indicate as major determinants of economic growth in the long term. Therefore, this study has used expenditure to health and education as a substitute of human capital. Accordingly, as shown in the trend graph below for the first ten years (1980-1990) the government expenditure on education and health didn't show a significant change, since the year 1990 the expenditure trend starts to show some increment and growth, however, from the beginning of 2005/2006 the trend is sharply upward indicating higher rate of growth which indicates on those years the government invest a lot on human capital.

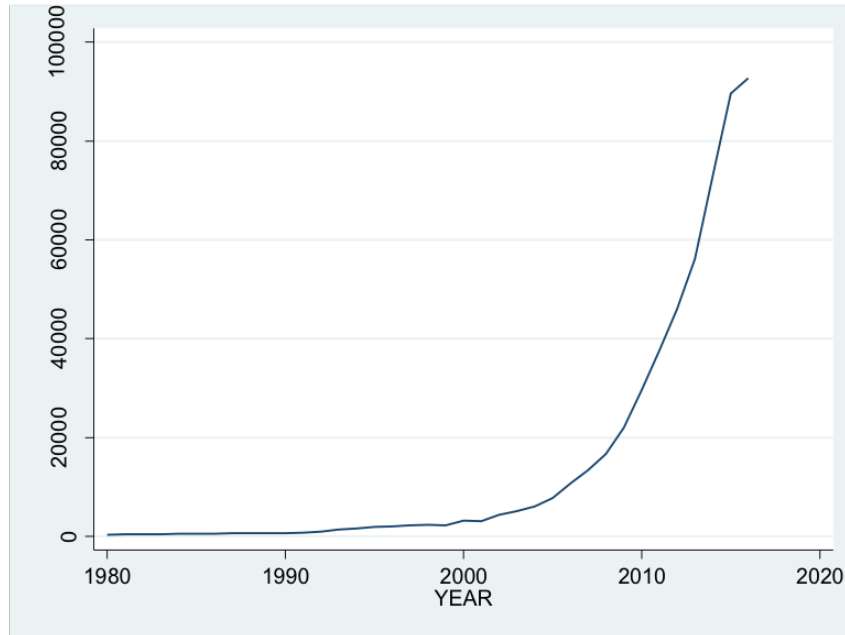


Figure 4.4: *Trends of Human Capital Expenditure [Source: own competition (2016)].*

4.1.5 Trends of Trade Openness

Trade openness refers to the outward or inward orientation of a given country's economy. Outward orientation refers to economies that take significant advantage of the opportunities to trade with other countries. Inward orientation refers to economies that overlook taking or are unable to take advantage of the opportunities to trade with other countries. Some of the trade policy decisions made by countries that empower outward or inward orientation are trade barriers, import-export, infrastructure, technologies, scale economies and market competitiveness.

The trends of the graph indicates that the transaction of import-export between the years 1980 to half of 1990's didn't show a significant change although it had a little fluctuation; however, since the beginning of the year 2000, the growth of export-import transaction shows a sharp vertical growth rate.

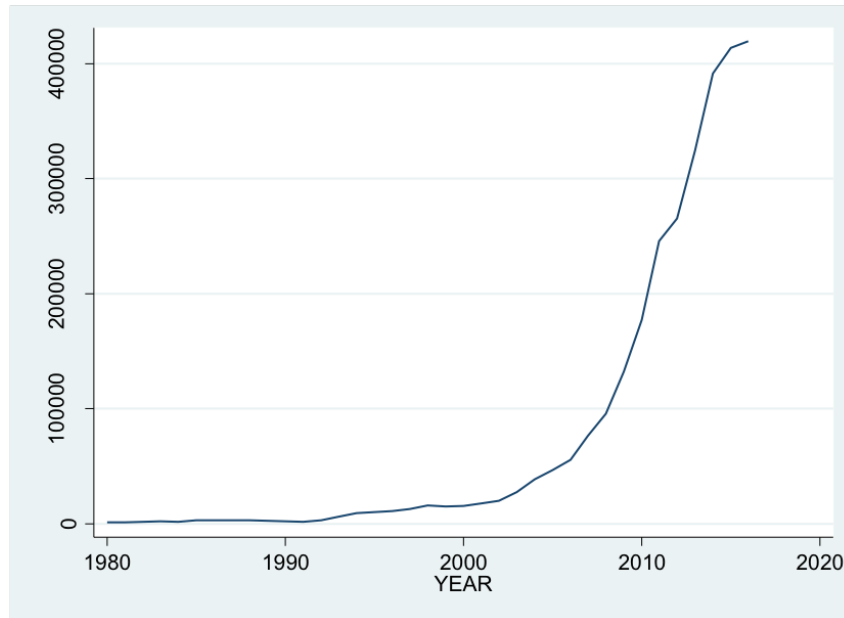


Figure 4.5: *Trends of openness to trade [Source: own competition (2016)].*

4.2 Econometrics Analysis: The Role of Remittance on Economic Growth

4.2.1 Unit Root/ Stationary Test

Time series data had trended nature and hence a unit root problem is expected or they mostly are non-stationary; if non-stationary of the macro variables is not corrected, it would lead the problem of spurious regression (false relationships among the variables) (Mekonnen 2017). Therefore, before estimating ARDL it is important to check the stationarity of the data.

For the purpose of this study Augmented Dickey Fuller (ADF) was used to test the problem of unit root. The interpretation of ADF test is done through comparing test statistics and critical values, whenever the absolute value of test statistics is greater than absolute values of critical values we reject null hypothesis and accept alternative hypothesis meaning the variable is stationary; conversely, if the absolute values of test statistics is less than absolute values of critical values we accept null hypothesis and reject alternative hypothesis meaning that the data is suffering from unit root problem. Accordingly, Real GDP, Remittance and Openness to trade were not stationary at level and become stationary at their second difference; whereas, Real private investment become at its first difference. On the other hand, the variable Human capital was transformed to log form to keep the stationarity, and hence, the

variable human capital become stationary at first difference of its log form.

Table 4.1: *Description of Unit Root Test*

Variables	At level/log level with trend (5%)			0 th difference with trend			2 st difference with trend		
	t-stat	Critical-value	p-value	t-stat	Critical-value	p-values	t-stat	Critical-value	p-values
RGDP	1.578	3.55	1.000	2.912	3.56	0.1585	5.21	3.56	0.0001
REM	5.91	3.55	1.000	2.48	3.56	0.3381	4.33	3.56	0.0028
logHC	1.21	3.55	0.906	5.7	3.46	0.0000	-	-	-
OPP	1.513	3.55	1.000	3.21	3.56	0.0822	7.36	3.56	0.0000
RPIV	0.937	3.55	1.000	5.03	3.56	0.0002	-	-	-

4.2.2 Diagnostics Test Results

Autocorrelation and Heteroscedasticity

In a regression, the problem of Autocorrelation happens when the error terms are made some pattern and serially correlated. In order to test the problem Durbin-Watson d-statistic test was performed, the result of the test indicated that there is no a problem of autocorrelation that means the error terms are not serially correlated since the statistics are 1.898244. Furthermore, Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was used to analyze the problem of heteroscedasticity, accordingly as shown in the table below the data didn't have a problem of heteroscedasticity.

Table 4.2: *Test of Heteroscedasticity and Autocorrelation*

Breusch-Pagan/Cook-Weisberg test for heteroscedasticity	Ho: Constant variance Variables: fitted values of RGDP2 $\chi^2(1) = 7.37$ $Prob > \chi^2 = 0.8708$
Durbin-Watson test for Autocorrelation	d-statistic (5, 35) = 2.154762

Multicollinearity

Multicollinearity is originally meant the existence of a perfect linear relationship between some or all explanatory/independent variables of a regression model (Gujarati, 2003). Therefore, in order to identify the existence of the problem the researcher employed a common test of VIF test. The interpretation is done as if the VIF is greater than 10; it is the indication of the problem of multicollinearity or the explanatory variables had a linear relationship or otherwise. Accordingly, as shown

in the table below none of the variable had a value VIF greater than 10, and hence, there is no the problem of multicollinearity.

Table 4.3: *Test of multicollinearity*

Variables	VIF	1/VIF
rpiv1	1.35	0.743078
opp2	1.3	0.772081
FiDlogHC	1.26	0.791820
rem2	1.24	0.805971
Mean VIF	1.29	

Normality test

Normality assumption states that the error term should be normally distributed; in order to test this assumption Skewness/Kurtosis tests for Normality was performed; the interpretation of the test is based on the p-values, meaning that if the p-value is greater than 5% significant level it is the indication of the error terms are normally distributed otherwise not. Accordingly, as shown in the table below the p-values is greater than 5% significant level which implies the error terms are normally distributed.

Table 4.4: *Test of normality*

Skewness/Kurtosis tests for Normality				
——- joint ——				
Variable	ObsPr(Skewness)	Pr(Kurtosis)	adj chi2(2)	<i>Prob > chi2</i>
Resid	350.2726	0.4486	1.91	0.3855

4.2.3 Long Run ARDL Bounds Test for Co-Integration

In order to test the long-run relationship between the variables Johansen co- integration Test technique was employed. Under the Johansen co-integration Test, there are two co-integrating equations. In Johansen’s Method, the trace statistic determines whether co-integrated variables exist. In Johansen’s method, the Eigen value statistic is used to determine whether co-integrated variables exist. Co-integration is said to exist if the values of computed statistics are significant and different from zero. Also, their eigen-values are significantly greater than zero. For the purpose of decision, the 5% critical value and trace statistics is compared.

(0) = Null Hypothesis: No co-integration among variables

(1, 2) = Alt Hypothesis: There is co-integration

Whenever the trace statistics is greater than critical values we reject the null hypothesis and accept alternative hypothesis. Conversely, whenever the trace statistics is less than the critical values we accept the null hypothesis and reject alternative hypothesis. Accordingly, at third rank zero the trace statistics is less than critical values and hence, there is long run relationship among the dependent variable and independent variables. Therefore, according to the result there is co-integration equation for GDP and Remittance, Human capital, openness trade and private investment. These variables go together in the long run.

Table 4.5: *Johansen tests for co-integration*

Trend: constant Sample: 1984 – 2016			Number of obs =33 Lags = 2		
Maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	30	-1352.1039	.	117.328	68.52
1	39	-1322.8167	0.83051	58.7537	47.21
2	46	-1309.6851	0.54881	32.4903	29.68
3	51	-1299.8809	0.44799	12.8820*	15.41
4	54	-1294.9879	0.25662	3.0959	3.76
5	55	-1293.4399	0.08955		

4.2.4 ARDL Long Run Model Estimation

As shown in the previous sub topic all of the assumption was fulfilled, therefore, as shown in the table below the coefficient of determination (R^2) for the model is 0.7991 ($F = 279, p < 0.001$) showing that the model explained 79.91% of the variation in the level of growth and the overall model is statistically significant. As indicated in the table below the coefficients of remittance and investment were significant at their second lag only, while openness to trade was significant on its first lag.

The coefficient of remittance is positive and significant. A percentage point change in remittance was associated with 3.02 percentage point increase on real growth rate in the long-run. In line with this study Aziz et al., (2015) found out that the workers' remittance through financial development significantly accelerate economic growth; this also supported by the face of financial liberalization and trade openness the workers' remittance significantly fosters economic growth. Conversely, Abera(2017) stated that the flow of foreign aid has a negative effect on economic growth both in long run and short run. This is mainly because the existence of poor institutional arrangement and the funds are not always connected to the productive sectors. In contrary to this, Kaasschieter, (2014) argues that remittances have no impact on

economic growth. When institutions are taken into account, this study finds evidence that remittances have a negative and significant impact on growth.

The coefficient of openness to trade had also a positive effect on its first lag. A percentage point change on the first lag of openness to trade was associated with 0.15 percentage point increase on real growth rate in the long-run. Silajdzic and Mehic, (2017) found the same result as this research trade intensity measures are positively associated with economic growth, pointing to the benefits of trade integration through not only exports but also increasing imports from technologically innovative. Malefane and Odhiambo, (2018) also found out that based on the long run empirical results trade openness has a positive and significant impact on economic growth when the ratio of total trade to GDP is used as a proxy, but not when the three other proxies are employed. Moyo, Kolisi and Khobai, (2017) also find out that trade openness have a positive impact on economic growth.

The coefficient of real private investment had a positive effect. A percentage point change on the second lag of real private investment was associated with a 75 percentage point increase on real growth rate in the long-run. According to Akpolat(2014) physical capital investments and education expenditures are more efficient to increase GDP in the developed countries in comparison to the developing countries. On the other hand, life expectancy at birth is detected as more efficient to increase GDP in the developing countries compared to the developed countries. Pelinescu (2015) also highlighted the importance of human capital in ensuring economic growth expressed as gross domestic product per capita. It was revealed a positive relationship, statistically significant between GDP per capita and innovative capacity of human capital and qualification of employees as expected according to economic theory.

Table 4.6: Long run Estimation Result of ARDL

Sample: 1984 – 2016 Number of obs = 33						
$F(9, 23) = 279.81$						
$Prob > F = 0.0000$						
$R - squared = 0.7991$						
$AdjR - squared = 0.7987$						
Log likelihood = -336.58716 Root MSE = 7794.5413						
RGDP	Coef.	Std. Err.	t	$P > t$	[95% Conf.	Interval]
RGDP						
L1.	1.18103	0.033579	35.17	0	1.111566	1.250493
rem2						
–.	3.02169	0.820487	3.68	0.001	1.324384	4.718997
L1.	-0.671094	0.6384567	-1.05	0.304	-1.991842	0.6496544
L2.	-3.681491	0.9631658	-3.82	0.001	-5.673951	-1.689031
hc1	-5.927525	1.719711	-3.45	0.002	-9.485018	-2.370032
opp2						
–.	0.1510883	0.1929115	0.78	0.442	-0.5501561	0.2479795
L1.	1.028528	0.2056845	5	0	0.6030371	1.454019
L2.	0.7576716	0.2083922	3.64	0.001	0.3265794	1.188764
rpiv1	0.751711	0.213043	3.53	0.002	0.310998	1.192424
_cons	-21705.56	5796.066	-3.74		0.001 -33695.64	-9715.483

4.2.5 Short-Run Error Correction Model

The estimation of short run Error Correction Model (ECM) is estimated indicates the speed of adjustment to restore equilibrium in the dynamic model. It is one lagged period residual obtained from the estimated dynamic long run model. The coefficient of error correction term indicates how quickly variables converge to equilibrium (Mekonnen, 2017). Therefore, according to the result of short run estimation the variables remittance openness to trade and private investment had significant effect on growth; on the other hand, the variable human capital expenditure didn't show a significant relationship with gross domestic product.

Accordingly, the coefficient of remittance had positive and significant effect on growth. In the short run changes in remittance affects gross domestic product. The analysis shows in the short-run a percentage point change on remittance investment was associated with a 3.87 percentage point increase on real growth rate in the short-run. The coefficient of openness to trade also shows a positive and significant effect on growth. The analysis shows in the short-run a percentage point change on openness to trade was associated with a 0.91 percentage point decline on real growth rate in the short-run. The coefficient of private investment also shows a positive and

significant effect on growth. Accordingly, in the short-run a percentage point change on private investment was associated with a 0.65percentage point increase on real growth rate.

Table 4.7: *Short-run estimation result of ERM*

ARDL(2,2,2,1,2) regression					
Sample: 1984 – 2016			Number of obs = 33		
			R-squared = 0.9113		
			Adj R-squared = 0.8506		
			Root MSE = 7578.6997		
Log likelihood = 61.144375					
D.RGDP2	Coef.	Std. Err.	t	$P > t$	[95% Conf. Interval]
ADJ					
RGDP					
L1.	-2.055934	0.2126682	-9.67	0	-4.111868
LR					
Rem2	-1.899748	0.5728365	-3.32	0.004	-3.7994968
opp2	0.3035852	0.1892074	1.6	0.125	-.0924305 .6996009
FiDlogHC	19908.21	9501.834	2.1	0.05	20.641 39795.77
rpiv1	-0.0682546	0.0740575	-0.92	0.368	-.2232588 .0867496
SR					
RGDP2					
LD.	0.5519058	0.1352736	4.08	0.001	.2687748 .8350367
rem2					
D1.	3.870456	0.8673261	4.46	0	2.055122 5.685791
LD.	3.426437	0.9718026	3.53	0.002	1.392431 5.460443
opp2					
D1.	-0.9190937	0.2756607	-3.33	0.003	-1.8381873
LD.	-0.5520963	0.2172139	-2.54	0.02	-1.1041924
HC1					
D1.	-16316.11	14406.17	-1.13	0.271	-46468.57 13836.35
rpiv1					
D1.	0.6513314	0.2187515	2.98	0.008	.1934792 1.109184
LD.	0.5065109	0.2319875	2.18	0.042	.0209555 .9920663
_cons	-1934.984	2907.324	-0.67	0.514	-8020.083 4150.115

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The study was conducted to analyze the role of remittance on growth rate; in order to find out these 37 years data 1980 to 2016 were used. Apart from making a diagnostic test bound test of co-integration was performed in order to find out the long run relationship of growth with remittance, human capital expenditure, openness to trade and investment. Apparently, autoregressive Distributed lag (ARDL) model and error correction model (ECM) was also used in order to estimate the long run and short run effect of the anticipated variables on growth rate.

The result of the analysis revealed that among the given variables remittance, openness to trade and private investment had a significant effect on growth both in the short and long-run. The finding indicates that remittance had a negative and significant effect on growth rate of the country; however, it had a positive effect in the short run. In the long run the ARDL model suggests that a one percent increases on the remittance of the country causes 3.42percent decline on growth rate; also in the short-run the ECM model suggests that a one percent increase on the remittance of the country contribute a 3.87percent increase on the growth rate of the country. The analysis further revealed that the openness to trade had a positive effect in long run; however, it had a negative effect in the short run. In contrary to this, real private investment had a positive effect on real growth both in the long and short run. On the other hand, the expenditure on human capital didn't have significant effect on real growth.

5.2 Recommendation

Based on the findings of the study the researcher forwards the following policy recommendations

- The countries remittance shows a significant effect both in the short and long run and plays a significant role Ethiopian economy. Therefore, government of Ethiopia should give greater attention by continuing the current trend and encouraging the Diaspora community to support the country through using legal and formal financial institutions whenever sending their money; and also support any alternative means that encourage institutions, individuals who strive to bring foreign currency.
- The real private investment had a highly significant effect on economic growth of the country; and hence, the government should encourage private investments, it should make the ground clear and comfortable to private investors such as reducing the government bureaucracy.
- This research can be used as a bench mark for further researches, therefore, anyone who are interested can assess the effect through adding additional variables which could be considered as a determinants of growth rate

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