SAINT MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF AGRICULTURE AND DEVELOPMENT STUDIES

THE EFFECT OF INTERNATIONAL REMITTANCE ON ECONOMIC GROWTH AND INVESTMENT IN ETHIOPIA

BY

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DECEMBER, 2018

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE

STUDIES IN PARTIAL FULLFILLMENT OF THE REQUIRMENT FOR THE DEGREE OF MASTER OF DEVELOPMENT ECONOMICS

DECEMBER 2018

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APPROVED BY BOARD OF EXAMINERS

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 Abdulheni Nuredin under the title "THE EFFECT OF INTERNATIONAL REMITTANCE ON ECONOMIC GROWTH AND INVESTMENT 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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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Gemoraw Adinew(PhD). All the sources of materials used for this thesis have been dully 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 degree.

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Name   Signature

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ENDORSMENT

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

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Advisor   Signature

St Mary's University, Addis Ababa   **December 2018**

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ACKNOWLEDGMENTS

ACRONYMS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criteria
ARDL	Autoregressive Distributed Lag Model
DF	Dickey –Fuller
ECM	Error Correction Model
EEA	Ethiopian Economic Association
EFY	Ethiopian Fiscal Year
GDP	Growth Domestic Product
HQC	Hannan –Quinn criteria
IMF	International Monetary Fund
MoFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
SBC S	Schwartz-Bayesian Criteria
SSA	Sub Saharan Africa
UN	United Nation
UNCTAD	United Nations Conference on Trade and Development
USD	United State Dollar
ECM	Error Correction Model
WB	World Bank

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ABSTRACT

In recent times remittance sent by Ethiopian migrants has increased tremendously, generating reliable, most stable and even higher foreign currency compared to foreign direct investment (FDI), official development assistance (ODA) and the volatile export earnings. However the effect of remittance on overall economic growth is a most contested topic. Some findings relate remittance with increased consumptive behavior, increased domestic price, increased in equality and moral hazard. Conversely, others relate remittance with reduced poverty, increased investment on human capital, increased investment due to its potential as a source of capital and increased aggregate demand and employment due to consumption multiplier effect,. This study assesses the effect of remittance on economic growth and investment level of Ethiopia employing a time-series data mainly from NBE and MOFED for the period between 1984/85-2016/17. ARDL Bound testing approach incorporating Error correction model is employed to estimate the long-run and short-run effect of remittance on economic growth and investment. The result reveals that in the short-run remittance affects both economic growth and investment negatively due to remittance's consumption smoothening role in the short run. Conversely, in the long run remittance affects both economic growth and investment positively, this shows the consumption multiplier effect on one hand and on the other the potential of remittance to serve as an alternative source of capital for investment and entrepreneurial purposes, in a face of credit market failure existed in most of developing countries. To enhance both the size and the positive role of remittance, government policies should concentrate on developing policies that attracts potential migrants investment, encourage/discourage formal/informal channels of remittance flow, discourage parallel exchange market, decrease cost of remittance and improve recipients accesses to banking in rural areas to improve saving habits.

Keywords: Remittance, Economic growth, Investment, ARDL Bound Testing, Error correction model

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

The Migration of the citizens of the developing countries to the developed world as well as to developing countries in search for better life is exacerbated in recent times. The number of migrants escaping from the horrors of conflicts, poverty, inequality & lack of decent jobs reached 258 million in 2017 out of which 75% are originated from the developing countries (UN 2017). Ethiopia ranked among the top ten immigration countries in the sub Saharan sub continent and also among top ten lower level income immigration countries in the world (WB 2016).The 1970's political unrest leading a noticeable urban elites, especially the young and the educated, to migrate to the west countries represent the early features of Ethiopian migrants followed by the 1980's migration made mainly for economic reason encompassing rural peasant to the middle east and the gulf region encompassing rural peasants(Alemayehu et al 2011). Apart from the heinous human trafficking activities inflicted on migrants and tragedies of human life losses on the way, migrants continues to be source of economic benefits for their countries.

Remittances send to the left once by migrants proves to be the source of income to household residing in the developing countries. According to IMF'S guideline introduced aiming to promote standard way of data recording among countries, remittance is a composition of compensation of employee and personal transfers[1]. According to the seminal work by Lucas and Stark (1985), this transfers to the households of the developing countries depend on three motivational factors; the first motive of sending remittance is pure altruism towards the left behinds, investment interest of migrants on their home country's economy is the other motive, which is executed in collaboration with close ones to optimize the benefits of both parties and

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[1] Personal transfers include "all current transfers in cash or in kind made or received by resident households to or from nonresident households." on the other hand compensation of employee describes the amount of gross income received by migrants who work in an economy where they are not resident for short times/a period less than a year(IMF 2009)

finally transfers may aimed for effecting payments for the cost incurred by the left once while sending the migrant abroad or similar familial arrangement.

According the world bank 2016 fact book, the total amount of remittance to the developing countries reached USD 431.1 billion in the year 2014, which show an increase by 92% compared with the 2006 figure of USD 228.6.the share of the sub-Saharan Africa from remittance sent by the developing countries citizens was USD 34.5 billion in 2014 which show more than 46% increase compare USD 23.5 billion in the year 2006 (WB 2016). Same increasing flow is also manifested when analyzing the flow of remittance toward Ethiopia in the past decades. In the period between 2004/05 and 2016/17 the remittance flow to the country registered an average annual growth rate of more than 33% (NBE 2017). As per National Bank of Ethiopia (NBE) the country's remittance inflow reached the highest point in the country's history amounting USD 4,434.65 million.

Besides its direct importance as cushion households' income during bad times, remittances play an important role as reliable and most stable sources of foreign exchange earnings and financial resource compared to official development assistance (ODA) and foreign direct investments (FDI) (Luambu 2014 , WB 2016). Remittance inflows to developing countries are estimated to be three fold of official development aid (ODA) (Luambu 2014; WB 2016). The same holds incase of Ethiopia, remittance flow to country has been increasing and proved to be stable source of foreign exchange in the past decades compare to other source of capital, such as FDI and ODA. According to NBE's data the remittance amount send to the country in the year 2016/2017 amounted USD 4,434.65 million exceed both FDI and ODA amount of USD 4,170.80 million and USD 1,458.77 million respectively for the same period. Further the importance of this flows amplified when the figure is compared to the country's export earning amount of USD 2,841.38 million for the year 2016/2017 which is much lower than transfers by the country's citizens abroad.

Furthermore the importance of remittance flow amplified in an economy like Ethiopia, characterized by production and export of predominantly primary and agricultural products which has a volatile price and demand subject to external shocks in the international market. On

the other hand an import mainly consisted of necessity goods and capital goods. Thus ability to import highly affects the country's ability to attract investment from abroad and also to encourage internal investments mostly dependent on imports ranging from raw materials to capital good that intern influence the country's economic growth. Remittance represents 7% of the country's nominal gross domestic product in the year 2016/17. On the other hand remittance ratio to the country's import shows on average in the past decade 23% of the foreign currency required for import is covered from foreign currency gained from remittance that has reached all time high 28% in the year 2006/17(NBE 2016/17).

However, the effects of remittance on economic development process of developing countries are more diverse than the one mentioned above and it is a matter of wide debate among migration and remittance optimists and pessimists. Remittance supporters posit that in addition to the facts discussed above, remittance at micro level helps to improve remittance recipients' standard of living and encourage households' investment in education and healthcare that in the long run contribute to migrant sending country's economic growth positively. However, others' argue against, based on how remittance are spent by recipients' households and/or migrants themselves, migrants are said to be rarely invest their money in productive enterprises, instead spend it on consumption of (generally imported) goods or on non-productive investments. Thus it is indicated that remittances may fuel inflation and reduce recipients' incentive to work which are obviously harmful for growth. Empirical studies on the economic effect of remittances also produce mixed and contradicting findings results (see De Haas 2007, Rapoport and Docquier 2005). Due to raising amount of remittance and its role on the lives of significant number of peoples, and other countless effects of remittance discussed in the literature part of this study, detail analysis in the area is necessary to enhance the positive effect and to curb any negative effect of remittance on overall economic growth.

1.2. Statement of the Problem

In the past few years, there have been an increasing number of studies made toward understanding the overall effect of remittance on a development of a country. The rising interest toward remittance is mainly attributed to the increasing amount of remittance flow to the developing world and its associated importance as a potential source of development finance.

However, the extent to which migration and remittances can bring about sustained human development and economic growth in migrant-sending areas and countries is subject to heated debate over the past decades.

The empirical literatures on the effect of remittance on development of countries economies are far from conclusive result and yielded contradictory findings. At the micro level findings shows that recipient households generally have higher levels of consumer spending and lower incidences of extreme poverty than their counterparts who do not receive remittances. Stratan et al. (2013) for Moldova, Adams and Page (2005) for 71 developing countries, found that remittances contribute to reducing the severity of poverty and the share of people under poverty. Recipient households make relatively higher investments in health care than those who do not receive remittances, Ratha (2013) reported positive correlation between the average number of household members with a secondary education and the receipt of international remittances in turn affecting economic growth in the long run.

However others argue, remittance creates dependency, Jadotte (2009) for Haiti and Chami et al. (2003) using panel methods on a large sample of countries reported negative effect of remittance on economic growth when they are perceived as a permanent source of income due to the moral hazard problem that explained by the income effect of remittances that could lead to recipients to work less and to diminish labor supply. Migration and remittance also associated with, increased inequality, through widening income difference between remittance recipients, and others, and increased price of goods services due to high consumptive behavior associated with recipient households affecting the poor negatively (Adams 2011, Lubambu 2014). Similarly Kireyev (2006) points that, remittance cause's strong disincentive for domestic savings and support private consumption of (imported) goods instead of financing investment, which can potentially hamper competitiveness and increase trade deficits

In contrast to the previous arguments, other studies like Adelman et al. (1988), Durand et al. (1996) and Taylor et al. (1996) indicate that the consumptive expenses of recipient households could positively impact the labor force market and incomes of non-recipient households indirectly via multiplier effects (e.g. employment opportunities on construction of houses and

development of enterprises). Remittances are believed to further allow migrants' households to build their assets, both liquid and fixed, enhancing access to financial services and investment opportunities (Orozco et al 2005; IMF 2005). Fayissa and Nsiah (2010) reported remittance has a positive and significant effect on growth where the financial systems are less developed by providing an alternative way to finance investment and helping overcome liquidity constraints. The debate on whether remittance is used for productive investments turning the recipients to potential entrepreneur or rather it is used jus as a strategic social insurance for families in smoothing current consumption is inconclusive. For Ethiopian case, Genet (2014) and Solomon (2014) employing Ethiopian rural household survey, Jibril and Leta (2016), Tesfaye (2018) and Girmachew (2014) employing different household surveys, and Wondaferahu et.al. (2015) and Mikiyas (2014) using time series data analyzed the effect of remittance on economic growth in Ethiopia reported a contradicting results.

This research is expected to provide knowledge about the contribution of remittance to the Ethiopian economy employing the most recent data ranging from 19854/1985 to 2016/17. Besides it tries to show whether remittance is used for investment in case of Ethiopia by analyzing the relation between remittance and investment. By doing so it aims to improve earlier works in the field and provide a new dimension in assessing the role of investment as a productive investment. In order to test the existence of long run relationship between the dependent variables (economic growth and Investment) and the set of regressors, the study has employed Autoregressive Distributed Lag Model (ARDL) or the Bound Testing Approach which is based on the works of Pesaran et al (2001).

1.3. Research Questions

The study critically investigates the following questions regarding to the effect of remittance on economic growth and Investment.

- ✓ What is the effect of remittance on economic growth?
- ✓ What is the effect of remittance on investment?
- ✓ Is there a long run and short run relationship between remittance and economic growth?
- ✓ Is there a long run and short run relationship between remittance and investment?

1.4. Research Objective

The General objective of the research is to determine the effect of remittance on the Ethiopian economy. Especially, the research has the following specific objectives.

- ✓ To assess the effect of remittance on economic growth in Ethiopia;

- ✓ To indentify whether remittances significantly affect the investment level in the economy;

- ✓ To determine the existence of long run relation between remittance and economic growth in the period under investigation ;

- ✓ To estimate the long run and short run effect of remittance on economic growth and Investment.

1.5. Research Hypothesis

Four testable hypotheses are formulated in this study:-

H 1: An increase in the level of remittance induce economic growth in Ethiopia

H 2: An increase in the level of remittance increase the level of investment in Ethiopia

H 3: Remittance significantly affects the long run level of economic growth in Ethiopia.

H4: Remittance significantly affects the long run level Investment in Ethiopia.

1.6. Significance of the Study

Previous studies emphasized on contribution of remittance to a country's economy, which are full of diversified and inconclusive results on economic growth and also based on the macroeconomic variable being investigated. Having the inconclusive results by itself is not a problem since the main differences on enjoying the fruit of remittance depend on social, political and economical environments existed on a particular country. So detail analysis and understanding of the subject matter allow to promote a conducive environment to which the positive returns of remittance is strengthen and the negative impacts be reduced even curbed.

This research believes to provide a better understanding on the challenges and prospects of remittance in Ethiopia to provide the level of attention required by policy makers for its future

improvement. In addition the study provides the necessary policy measures to strengthen the affirmative result existed and to minimize and further to curb the demerits existed by supplying empirical knowledge about the environments led to the positive results . Finally the research is expected to add additional dimension to the existed literature and also expected to pave way to other researchers interested in the fields.

1.7. Scope and Limitation of the Study

The study has the aim to assess the contribution of remittance on the Ethiopian economy. Through which it evaluates the trend and structure of remittance combining with its effect on the economic growth of Ethiopia at a macro level. A time series data ranging from 1984/85-2016/17 from MOFED, World Bank and NBE will be majorly employed. Data concerning remittance is very problematic which varies across the sources. Despite the fact discussed, all the major international and financial institution data's shows the increasing trend of remittance toward the developing countries. The World bank data for remittance is used in the study, since the data exhibited consistency due standardized data gathering methods over the years and provide enough numbers of observations, unlike, NBE (the main internal source for such data) that started registering data for remittance separately only after the year 1996/97. However remittance flows through the informal channels, which represent a major part of total remittance flow, is not captured on the data used for the study, which could be the major limitation for this study.

1.8. Organization of the Study

The rest of the paper is organized as follows. Chapter two gives a brief review both on the theoretical and empirical literatures in line with remittance and its contribution to the economy. Subsequently the third chapter explains model specification, the data type used and source along with methodology adopted. Chapter four presents, the descriptive and econometric analysis concerning remittance flow and its role on economic growth and investment. The last chapter deals with conclusions and policy implications based on findings obtained from the analysis.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. Conceptual Definition

Various writers hold different views regarding the concept of remittances. Adams and Page (2003) treat remittances as transactions that are initiated by individuals living or working outside their country of birth or origin and related to their migration. The components of remittances are compensation of employees, workers' remittances and migrant transfers. IMF's Balance of Payments Manual (2009) defines these components as:

➢ Compensation of employees comprises wages, salaries, and other benefits earned by individuals in economies other than those in which they are residents for work performed for and paid for by residents of those economies.

➢ Workers' remittances cover current transfers by migrants who are employed in new economies and considered residents there. A migrant is a person who comes to an economy and stays there, or is expected to stay, for a year or more.

➢ Migrants' transfers are contra-entries to the flow of goods and changes in financial items that arise from the migration of individuals from one economy to another.

If migrants live in the host country for a year or longer, they are considered residents, regardless of their immigration status. If, however, the duration of stay is less than one year, their entire income in the host country shall be classified as compensation of employees (IMF 2009).

2.1.2. Theoretical Literature on Remittance

The theoretical literatures on remittances has gone under various courses along the ages that range from scholars advocating optimist views toward impact of remittance on development and economic growth to scholars advocating pessimistic view and other recent literatures combining those two approaches. The literatures analyzing impacts of remittance are intertwined mainly with migration that have a more broad influence on migrant sending countries economic as well as socio, cultural, political aspects. Even if there is almost consensus on direct contribution of migration and remittance on the livelihood and survival of families left behind, the extent to which migration and remittance can bring about sustained human development and economic growth in migrant sending area and countries has been the subject of heated debate.

The migration optimists (Developmentalist) had been advocated around the 1950's and 1960's when large-scale labor migration from developing to developed countries began to gain momentum argued that migration leads to a North-South(developed to developing countries) transfer of investment capital and accelerates the exposure of traditional communities to liberal, rational and democratic ideas, modern knowledge and education. From this perspective, (return) migrants are perceived as important agents of change, innovators and investors. The general expectation was that the flow of remittances—as well as the experience, skills and knowledge that migrants would acquire abroad before returning—would greatly help developing countries in their economic take-off (De Haas 2007).

The migration pessimists (Historical structural and dependency views) gain momentum in the late 1960s, due to among other things the existing optimistic views on migration and development in sending areas were increasingly challenged by an increasing number of empirical studies that often did not support optimistic views on migration and development. "Migration pessimists" have argued that migration provokes the withdrawal of human capital and the breakdown of traditional, stable village communities and their economies. This would then lead to the development of passive, non-productive and remittance-dependent communities. Besides the "brain drain" the massive departure of young, able-bodied men and women from rural areas

is typically blamed for causing a critical shortage of agricultural and other labor, depriving areas of their most valuable work force.

Scholars from this strand of approach have also argued that remittances were mainly spent on conspicuous consumption and "consumptive" investments (such as houses), and rarely invested in productive enterprises (De Has 2007). Skepticism about the use of migrant remittances for productive investments became the common thread of the migration and development debate. Besides weakening local economies and increasing dependency, increased consumption and land purchases by migrants were also reported to provoke inflationary pressures and soaring land prices (De Has 2007; Russell 1992). In addition exposure to the wealth of migrants was assumed to contribute to a change in rural tastes that would increase the demands for imported urban or foreign produced goods and food. This would further reinforce the cycle of increasing dependency (De Has 2007; Lipton 1980).

Pluralist perspectives (New economics of labor migration and livelihood approaches(NELM)) had emerged in the 1980's and 1990's in response to the above discussed extreme approaches that regarded to be too rigid and deterministic to deal with the complex realities of the migration and development interaction. NELM offered a more explicit view that links causes and consequences of migration in which both positive and negative development effects are possible. This new approach models migration as the risk-sharing behavior of households, households choose migration to diversify resources such as labor in order to minimize income risks. This approach shifted thinking on migration from the developing world analysis by placing the behavior of individual migrants within a wider societal context and considering the household.

Migration is perceived as a household response to income risks since migrant remittances serve as income insurance for households of origin (Lucas and Stark 1985). NELM scholars argue that migration plays a vital role in providing a potential source of investment capital, which is especially important in the context of the imperfect credit (capital) and risk (insurance) markets that prevail in most developing countries which are often weakly developed and inaccessible to non-elite groups. Hence, migration can be considered as a livelihood strategy to overcome various market constraints, potentially enabling households to invest in productive activities and

improve their livelihoods. On the other hand, prior findings against optimist views that lade to the rise of pessimistic view toward migration, criticized for having weak methodological foundation and poor analytical quality, which often failed to take into account the complex, often indirect, positive is of migration and remittances on migrant-sending communities as a whole, including non-migrant households (De Has 2007; Taylor et al 1996).

Motivation of Remittance (Current insights) -the level of migrants' remittance flows depends on both the migrants' ability, i.e. their income and the savings from income, and their motivation to remit savings back to the home country (OECD 2006). The current literatures on remittance employ the behavioral factors related to migrants specifically the motivational factors behind migrants remittance are used to explain details such as the amount of remittance, size, flows and final use of such transfers. The motivational factors behind remittance are discussed in two levels in the literatures: microeconomic and macroeconomic motivation of remittance.

Microeconomic Motivation of Remittance

The motives behind migrants to send money to home country is the main factor to understand the reason behind why any migrant send money to the home country and other details regarding this transfers including the amounts, continuity or flow and intended purposes of such transfers. This in turn describes the final impact on the whole economy created by these transfers. The literature regarding motives behind remittance distinguishes between pure altruism, pure self-interest, and informal agreements with family members left in the home country (Lucas and Stark 1985; OECD 2006).

When considering the question why migrants decide to give up fractions of their disposable income to send them back to their country of origin the literatures identify altruism as main intuitive. The migrants' concern about relatives left in the home country: spouses, children, parents, and members of larger kinship and social circles. Under an altruistic model, the migrant derives satisfaction from the welfare of his/her relatives. The altruistic model advances a number of hypotheses. First, the amount of remittances should increase with the migrant's income. The altruistic transfer increases with the migrant's income and degree of altruism, and decreases with

the recipient's income and degree of altruism (Rapoport and Docquier 2005). Second, the amount of remittances should decrease with the domestic income of the family. And third, remittances should decrease over time as the attachment to the family gradually weakens. The same should happen when the migrant settles permanently in the host country and family members follow.

Another motive for remitting money to family members in the home country may be pure self-interest. Such motivations are generally the sign of a temporary migration, and signal the migrants' intention to return. According to Lucas and Stark (1985), OECD (2006) and Rapoport & Docquier (2005) this model hypothesized that First, a migrant may remit money to his/her parents driven by the aspiration to inherit, if it is assumed that bequests are conditioned by behavior. Beside loss of reputation or prestige among the left behinds, default to remit may also be sanctioned by denying the migrant rights to future inheritance, family solidarity or return to the village for retirement, an option that most migrants want to keep open.

The Second motive related to pure self-interest is, the ownership of assets and investment in the home areas may motivate the migrant to remit money to those left behind, in order to make sure that they are taking care of those assets. In such arrangements the migrants buy various types of services such as taking care of the migrant's assets (e.g., land, cattle) or relatives (children, elderly parents) at home and the amount transferred must lie somewhere between the market price for such services (or their marginal value for the buyer if these are not traded) and the opportunity cost of the recipient (Lucas and Stark 1985; OECD 2006; Rapoport and Docquier 2005).

The parties respective bargaining power is also another factor in deciding the amount of remittance remitted, these may be determined by local labor markets conditions (e.g., more unemployment raises the migrant's bargaining power). Third, the intention to return home may also promote remittances for investment in real estate, in financial assets, in public assets to enhance prestige and political influence in the local community, and/or in social capital (e.g. relationship with family and friends) (Lucas and Stark 1985; OECD 2006; Rapoport and Docquier 2005).

Familial arrangements between the migrants and extended family members are complex and cannot be explained only the above two extreme motives of remittance. Lucas and stark (1985) explained the motive behind remittance by a more balanced model labeled tempered altruism and enlightened self-interest. In this model, remittance determination is placed in a family framework of decision-making: within the family there may be a Pareto-superior strategy to allocate certain members as migrants along with intra-family understanding that serves as an "implicit co-insurance agreement", and as an "implicit family loan agreement".

In the implicit co-insurance, in a first phase, the migrant plays the role of an insured and the family left at home the role of the insurer. The family finances the initial costs of the migration that the potential migrant is unable to cover. In turn, the migrant can act also as an insurer for the family members back home in a second phase when the migrant secured employment, high enough earnings and has positive expectations about further income. By receiving remittances, the family will then have the opportunity to improve its consumption, to undertake investment projects including much more risk and thus reach a higher level of utility (Lucas and Stark 1985; OECD 2006).

According to Lucas and Stark (1985), the loan agreement model can viewed with three stages. First, remittances are used as repayment for an informal and implicit loan contracted by the migrant for investment in education and migration costs. Second, they are loans made by migrants to young relatives to finance their education, until they are themselves ready to migrate. Finally, before returning to their original country, migrants invest accumulated capital at home. Later, the next generations of emigrants repay the loan to the former emigrant lenders, who may have retired in the home country.

Macroeconomic motivation of remittance

Most of the Literatures are concentrated and gave more weight to microeconomic factors in determining remittance flows in the long run, while macroeconomic factors are presumed to have only a short-term effect, essentially by shifting remittances around the long-term trend. These

include macroeconomic factors both in the host and home countries that may significantly affect flow of remittance.

Migrants' savings that are not needed for personal or family consumption may be remitted for reasons of relative profitability of savings in the home and host country. In contrast to remittances for consumption purpose, the remittance of these kinds of savings have an exogenous character related to the system of migration, and are expected to depend on relative macroeconomic factors in the host and home country, i.e. interest rates, exchange rates, inflation, and relative rates of return on different financial and real assets. Relying on such assumptions, governments of migrant sending countries used to implement incentives schemes, i.e. premium exchange rates, foreign exchange deposits with higher returns, etc. in order to attract remittances from their Diasporas.

2.2.　Empirical Literatures -Remittance, Investment and Economic Growth Linkage

Studies on the effect of international remittance on social and economic development of migrant-sending countries are far from conclusive result and yielded contradictory findings. The magnitude of the development impact of remittances on the receiving countries was assumed by many scholars to depend on how this money was spent (Shera and Meyer.2013).Consequently for long a central point of skepticism and controversy on the effect of migration and remittance on development has been whether remittance is used for consumption or investment, and the widely held belief was that migrants rarely invest their money in productive enterprises, but instead spend it on consumption or non-productive investments (De Haas.2007, Rapoport and Docquier 2005).

Chami et al (2005) tried to find out if remittances behave similar to capital flows, i.e. if they correlate positively with GDP, and found significant negative influence on economic growth. This seems to indicate that the money which the emigrant sends back home represent mere "compensatory transfers" providing support to poor families during difficult times. Consequently, the variance of remittance flows is likely to be countercyclical (Chami et al,

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2005). Because remittances take place under asymmetric information and economic uncertainty, it could be that there exists a significant moral hazard problem leading to a negative effect of remittances on economic growth. Given the income effect of remittances, people could afford to work less and to diminish labor supply. Using panel methods on a large sample of countries Chami et al. (2003) found that remittances have a negative effect on economic growth (which according to the authors indicates that the moral hazard problem in remittances is severe).

Jadotte (2009) also demonstrate the negative impact of remittance when they are perceived as a permanent source of income. He demonstrates such negative effects in Haiti on both working hours and labour market participation. Accordingly, remittances may reduce the recipients' likelihood to work, and increase the private consumption of (generally imported) goods instead of financing domestic investments or savings (Azam and Gubert, 2006; Chami et al., 2003).

Other studies are less upbeat and mention the potentially adverse effects of remittances in that they create a strong disincentive for domestic savings and support private consumption of (imported) goods instead of financing investment, which can potentially hamper competitiveness and increase trade deficits (Kireyev 2006). Brown and Ahlburg (1997) argued that remittances undermine productivity and growth in low-income countries because they are readily spent on consumption likely to be dominated by foreign goods than on productive investments.

Genet (2014) using Ethiopian rural household survey, she tries to examine the impact of remittances on household expenditures and labor supply in rural households of Ethiopia. She founds that, households receiving remittances spend on average ceteris paribus, a larger share of their budget on consumption of food compared to a smaller share by households receiving no remittances. As result concluded, that migration and remittances are used as a short term coping strategies and hardly used as means to productive investment options.

There is no doubt that spending on entrepreneurial investment has a positive direct effect on employment and growth. However, other scholars documented that even the disposition of remittances on consumption and real estate may produce various indirect growth effects on the

economy. These include the release of other resources to investment and the generation of multiplier effects. Lowell and de la Garza (2002) research shows that remittances, even when not invested, can have an important multiplier effect. One remittance dollar spent on basic needs will stimulate retail sales, which stimulates further demand for goods and services, which then stimulates output and employment (Lowell and de la Garza, 2002). The empirical evidence indicates that multiplier effects can substantially increase gross national product. Thus for example every dollar received from remittance and then spend in Mexico induced a GNP increase of USD 2.69 for the remittances received by urban households and USD 3.1 for the remittances received by rural households (Ratha.D 2003).

Goschin (2014) addressing the difficulty nature to understand the destination of remittance income in terms of usage, he regressed the gross domestic product with a two years lag of remittance arguing it would allow to understand remittance as a productive investment and found a positive impact of remittance on economic growth. Since current nominal gross domestic product is dependent on previous level of investment it is plausible to hypothesize lagged remittance as an investment agent. In addition a study made on five Sub-Saharan African countries, whose citizens migrated to work in South Africa mines, reports that migration caused a reduction in labor supply and crop production in the short run, but enhanced crop productivity and cattle accumulation through invested remittances in the long run (Lucas and Stark 1985).

Remittances are believed to further allow migrants' households to build their assets, both liquid (cash) and fixed (property), enhancing access to financial services and investment opportunities (Orozco et al., 2005; IMF, 2005). In the Philippines and Mexico, for example, research suggests that remittance inflows are associated with a greater accumulation of assets in farm equipment, higher levels of self-employment and increased small-business investments in migrant-sending areas. Similarly, Rapoport and Docquier (2005) suggest that remittances can promote access to self-employment and increase the likelihood of recipients investing in small business, contributing in turn to the development of financial systems in the home country.

Mohammed 2016 employing the Multiple Equation Models analyzed the impact of remittance on the impact of workers' remittances on economic growth, capital formation and savings, using

panel data for eight selected labor exporting Middle East and North Africa countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia). He reported positive significant impact of remittance on growth, and strong significant impact on capital accumulation. This finding is attributed to remittance contribution in increasing income for consumption, investment and capital formation through both altruistic and selfish motives. However a negative relation is reported regarding impact of remittance on domestic savings. This result is attributed to limited access to banking facilities and the use of informal means of transferring for incoming funds.

Fayissa and Nsiah (2010) studied whether remittances can spur economic growth and development in 18 Latin American countries within the conventional neoclassical growth framework using an unbalanced panel data spanning from 1980 to 2005. Their result established that remittances have a positive and significant effect on the growth of Latin American Countries where the financial systems are less developed by providing an alternative way to finance investment and helping overcome liquidity constraints. To be specific, they found that a 10 percent increase in remittances lead to a 0.15 percent increase in GDP per capita income.

Apart from the debate on the final use of remittance by recipients involving consumption, saving and productive long term investments, the other strand of remittance draw from numerous household surveys that revealed, recipient households make relatively higher investments in health care and education than those who do not receive remittances. This is evidenced by, for example, recipient households having higher birth weights (e.g. in Mexico and Sri Lanka), lower rates of infant mortality, higher weight levels during early childhood, and higher health-related knowledge than other households that do not receive remittances (Hildebrandt and McKenzie 2005; Prabal and Ratha 2012).

When it comes to the effects of remittances on education in origin countries, findings suggest that migration and remittance inflows can positively add value to the local human capital and ensure greater school attendance and educational achievement (De Haas, 2007). A cross-country comparison of six sub-Saharan African nations shows a strong, positive correlation between the

average number of household members with a secondary education and the receipt of international remittances (Ratha, 2013). According to Mara et al. (2012), remittance inflows tend to reduce the liquidity constraints of households, allowing them to increase educational expenditures. Adams and Cuecuecha (2010) also found that households in Guatemala receiving internal and international remittances spend 45.2 per cent and 58.1 per cent, respectively, more on education than do non-remittance households. As stated by De Haas (2007), such long-term investment of remittance inflows for education are of high interest because they function as insurance strategies for households and families that do not have access to formal social security arrangements.

Remittance's contribution to the balance of payment of recipient countries is also established in the literature. remittance have a more positive impact on the balance of payments than other monetary inflows (such as financial aid, direct investment or loans), because their use is not tied to particular investment projects with high import content, bear no interest and do not have to be repaid(OECD 2006). In addition, remittances are a much more stable source of foreign exchange than other private capital flows and for certain countries they exhibit an anti-cyclical character (Buch and Kuckulenz 2004).

On the contrary to the above effects of remittance it is discussed remittance affect the current account negatively which is referred as "boomerang effect" OECD (2006). This effect refers a scenario when remittance trigger an increase of imports and trade balance deficits in the remittance-receiving country which most scholars disagree with. The propensity to import can also increase as a consequence of the general development of the economy, of a structural change in the production of consumer or investment goods, or of the international division of labor. Evidence shows that in south European countries, remittance-induced imports between 1960 and 1981 accounted for minimums of 1% in Spain and Italy, to maximums of 4.9% in Greece and 6.2% in Portugal (Glytsos, 1993).
\
Additionally, Barajas et al., 2011 have observed that the growing consumption of recipients may increase the local market price and appreciate the exchange rate. As a result, the macroeconomic

mechanism known as 'Dutch Disease' may yield the failing of the tradable sector of domestic economy, the rising of current account deficit, and inflation with weaker monetary control.

2.2.1. Remittance, Economic Growth, Consumption and Investment in Ethiopia

Despite a number of studies have been made in the area on international level covering a very wide area of analysis, however, there has been a shortage of studies in the national level in terms of number and also dimension. For Almayehu et al. (2011) the shortage of studies in the area is a bizarre, according to Almayehu et al. (2011) it is surprising to observe shortage of studies in the area, even though the officially recorded remittance level is higher than the export earnings. The following part tries to show some of the recent findings in the area that employed macro and micro level data for Ethiopia.

Remittance and Economic Growth

Tassew and Rao (2016) employing time series data for the period between 1981 – 2012 using ARDL model analyzed the impact of remittances on Ethiopian economic growth, and reported in the short run the impact of remittances on economic growth is significant while in the long run it affects the economy negatively. However somehow in contrast with the above finding, Wondaferahu et al. (2015) employing ARDL model for the time series data ranging from 1980-2011 reported that remittance have a significant impact on Economic growth, both in the long run and in the short run, and also found that remittance to have a significant long run impact on poverty reduction.

In different manner with the above findings, a study on by Baldé (2009) on 28 Sub Saharan African (SSA) countries including Ethiopia for the period 1980-2004 using Two Stage Least Stage (TSLS) instrumental variable method found that remittance do not have direct positive impact on economic growth in SSA countries. The various findings among the studies above were associated with the socio-economic effect of remittance that intern affect economic growth. For Tassew and Rao (2016) the long run negative effect of remittance is associated with the fact that large share of remittance is spent for daily consumption purposes and the moral hazard problem. On the other hand the positive significant effect on economic growth reported in

Wondaferahu et al. (2015) is associated with remittance's positive impact on increasing real private investment and fixed capital accumulation. However, these studies fail to present empirical test for their claimed changes that remittance is said to bring as to create the changes observed on economic growth. Thus, in order to further understand how remittances effects are interpreted to changes on economic growth, empirical test related to such variables has to be under taken. However, there are a shortage of such studies especially that show the relation between remittance and other macro variables. Comparatively there are more studies s on micro level and the following discussion present some of micro level studies concerning remittance and related variables.

Remittance, and Consumption and Investment in Ethiopia

Jibril and Leta (2016) analyzed the impact of international remittances on poverty reduction in Jimma zone of Ethiopia employing household surveyed data collected from 371 household heads in the year 2014. Using binary logistic model, they reported that poverty status of households is negatively related with the inflow of international remittances. The result showed households who receive remittances are less likely to be poor. Other things remain constant; the odds ratio in favor of being poor reduces by a factor of 0.166 as the remittances inflow from abroad increases by one birr. This suggests that households who received remittances are endowed with additional income and hence less likely to be falling into poverty. Tesfaye (2018) using the household level cross sectional data from North Wollo Zone, Gubalafto Woreda in Amhara Regional State indicates that remittance has positively and significantly affected household level consumption expenditure.

There seems to be anonymity toward poverty reducing effect of remittance on migrant families increasing income level, providing resources for increasing consumption expenditure and rising level of living standard. Finding on importance of remittance on the livelihood of households by Girmachew (2014) from a survey made on 554 migrant families shows, 65.6% of migrant families are reported to be unable to sustain their improved living standard if it is not for remittance, while 27.9% of the families (well to do families and families received remittance intermittently like in times of holidays and times of crisis) believed they could achieve the same level of living standard without remittance. The study also using multiple response reported a

substantial level (43.5%) of the families would not be able to ensure basic necessities, 19.8% would not be able to expand business, 22.1% could not afford education expense, 20.4% could not own houses without remittance.

Despite the general consensus among studies regarding positive effect of remittance on raising living standard among migrant families, however there seems to be inconclusive findings on final use of remittance in which its overall effect on a countries economy is analyzed through literatures. The main difference lies on whether remittances are used for productive investments or they are just used only for smoothening short run consumption, which is widely held view. Jibril and Leta (2016) finding from surveyed 371 households showed, majority of households (59.26%) used remittances for daily expenses such as food. The same is reported in almost all reviewed studies Genet (2014), Girmachew (2014), Kuschminder and Siegel (2014), Solomon (2014), Tesfaye (2018).

However a significant amount of households in the above survey used remittance on other economic activities other than consumption, such as keeping under saving account (17.59%), investment on small business (13.89%) and housing (9.26%). Kuschminder and Siegel (2014) for a total of 1282 household surveyed in 15 different communities in Ethiopia reported remittance is most commonly used for satisfying daily needs, debt-repayment and ceremonies. And less than 20 per cent of remittances received are reported to be used for productive investments such as education, housing or land, or a business investment. Girmachew (2014) finding shows out of 544 respondents 43.6% were engaged in some sort of business or income generating activities. Girmachew (2014) showed the significant role of remittance in setting up or expanding business. The survey result shows majority (68.1%) of households engaged in business activities initiate or expand their business through remittance and of these, about three-quarters stated that their business were fully initiated through remittance while the remaining 0ne fourth received partial support.

Solomon 2014 employing data from 2009 Ethiopian rural household survey (ERHS) (covering 1,480 rural households in fifteen Ethiopian villages across four major regions of the country) estimated two-part model within Engle's Curve framework reported that remittance is used as

short term coping strategies and hardly used as stepping-stone to productive investment options.. The finding shows that remittance receiving households (24% of the surveyed households) spend more on consumption goods (7% and 4% more on food and non-food items respectively) than those households with no remittance income. A 1% increase in the amount of remittances received by the households is associated with an increase in the amount of income spent on food items by 2% and an increase spending on non-food items by more than 2%. On the other hand, amount of remittance received doesn't affect the amount allocated to human capital development goods (education and health) and capital investment (durables and agricultural inputs) goods. This implies that remittance is significantly and positively affects consumption items which increases the welfare of households in the short-run, but no longer available to boost the welfare of households and alleviate poverty in the long run. This is similar to Genet (2014), using similar data set showed migration and remittances are used as a short term coping strategies and hardly used as means to productive investment options.

Some tried to explain these versatile results across households or regions based on migration and household lifecycles, according to Conway and Cohen (1998), activities, expenditure and investment patterns are likely to change over the course of migration and household lifecycles. Further explain this point De Has (2007) argued often it is only at a later stage when the migrant has more or less settled at the destination, found relatively secure employment and the most basic needs of the household "back home" are fulfilled (such as food, health, clothing, primary education, basic household amenities, paying off debts and so on), that there is more room for investments. It is, therefore, unrealistic to expect that the full development effects of migration and remittances will materialize within the first or second decade following the onset of large-scale migration. Table 3.1 summarizes this relationship between the household migration stage (related to the family lifecycle) and consumption and investment patterns of households that receive remittances.

In similar manner, Girmachew (2014) for survey on 554 migrant families reported, the balance of remittance usage has changed from a focus on daily subsistence and social events to more investment in housing, business and education over the past decade. The general trend shows that remittance is used to meet daily consumption, together with education and then move on to fund

building assets (e.g. Housing, land, and consumer durables) and ultimately business investments (Girmachew 2014). However, this doesn't mean that remittance spending is linear, or that all households necessary follow the same path. The extent to which money is remitted, and how and where remittances are spent, fundamentally depends on the migrants' social and economic position at the destination as well as on the investment conditions in the countries of origin (De Has 2007). Girmachew (2014) also reported the same for Ethiopia that explains why remittances impact so differently on different countries and communities.

Table 3. 1 Relation between household migration stage, consumption and investments

Stage		Migration	Consumption and investment patterns by migration households
I		Migrant is in the process of settling	Most urgent needs are filled if possible: food, health, debt repayment, education of children.
II		Migrant is settled and has more or less stable work	Housing construction, land purchase, basic household amenities, continued education.
Three optional outcomes	IIIa	Ongoing stay	(Higher) education of children. Diverse investments: commercial housing and land, shops, craft industries, agriculture. Magnitude, spatial and sectoral allocation depending on household income, macro and local development/investment context.
	IIIb	Return	Continuing investments (as IIIa) if the household has access to external income (for example, pensions, savings or creation of businesses).
	IIIc	Family reunification	Traditional view: no significant investments besides help to family/community members; this view is challenged by evidence that more and more migrants seem to adopt transnational lives and identities, which may be associated with continued home country engagement and/or investments

Source: De Has 2007

2.3. Conceptual framework

The theoretical and empirical literatures reviewed in forgoing discussions set the conceptual frame work for this study summarized in the figure 3.1. The figure represented the most important linkages between remittance sent by migrants to the home country and variables including economic growth and investment level under the overall socioeconomic development effect of remittance. Both, theoretical and empirical, literatures on the effect of remittance on economic growth are channeled through various channels as presented in the figure below; however there seems to be no consensus existed among works on the exact effects of remittance on economic growth.

Even if some works reported the disposition of remittances on consumption and real estate may produce various indirect growth effects on the economy, but there is overwhelming consensus that spending on entrepreneurial investment has a positive direct effect on employment and growth. The extent to which migrants and recipients uses their income for investment is the most important variable needed to be investigated while assessing the effect remittance on economic growth that should be done considering the possible shifts on spending behaviors on the short run and in the long run. Furthermore the extent to which money is remitted, and how and where remittances are spent, fundamentally depends on the migrants' social and economic position at the destination as well as on the investment conditions in the countries of origin. This could explain why remittance effect and spending behaviors differs across countries and communities, the same is reported by works based on household surveys on different regions of Ethiopia that come up with various uneven results. This further requires empirical analysis on macro level that could absorb the changing spending behaviors of remittance recipients along time and different regions which is absent in case of Ethiopia. This study is expected to add knowledge, fill gaps and supplement previous works by providing empirical results on the extent to which remittance affect investment level using macro level data.
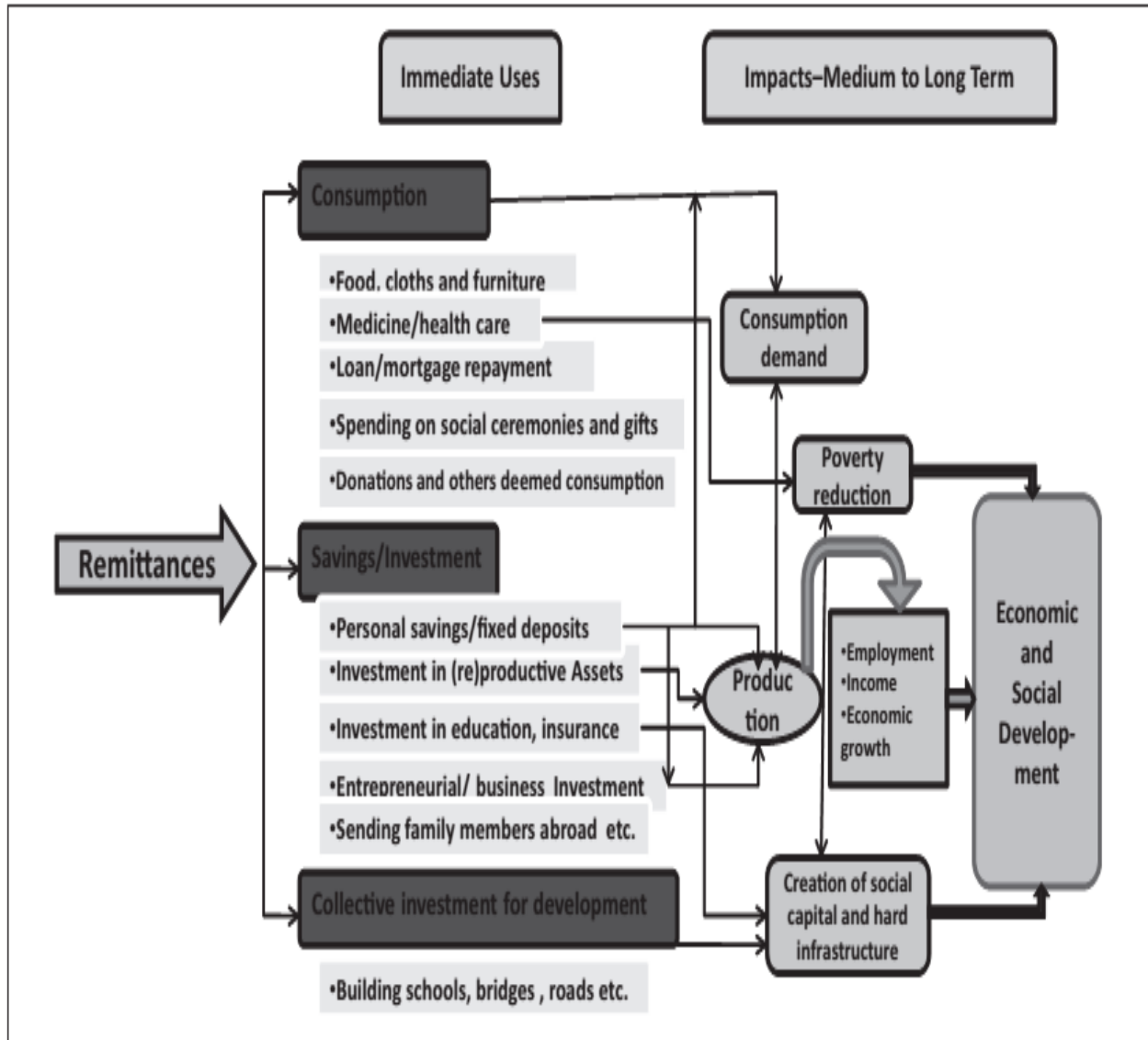
Source: adapted from Barai 2012

Figure 3. 1 Socioeconomic development linkage of remittance

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Research Design

The study design employs an explanatory or causal research design in order to achieve its objectives. It is the most appropriate design for identifying the causal relationships between the Economic growth, Investment and other explanatory variables.

3.2. Data Type, Sources and Data Collection Methods

The study mainly uses secondary quantitative time series data. Specifically, data for the time frame ranging from 1984/85 to 2016/17 will be used. The underlined time frame is selected due to its importance for analyzing the full developmental effect of migration, as it lies a decade after the mass migration of the 1970's. DE Has (2007) discussing stages of migration and its development effect, the short term effects of migration on livelihoods and household production in sending communities are often negative due to the immediate lost-labor effect. It is often only at a later stage, when the migrant has more or less settled at the destination, found relatively secure employment and the most basic needs of the household back-home are fulfilled (such as food, health, clothing, primary education, basic household amenities, paying off debts and so on) that there is more room for investments (De Has 2007). Thus, the full development effects of migration and remittances will materialize after the first or second decade following the onset of large-scale migration (De Has 2007).

The World bank data (World Development Indicator (WDI)) for remittance is used in the study, since the data exhibited consistency due standardized data gathering methods over the years and provide enough numbers of observations, unlike, NBE (the main internal source for such data) that started registering such data, individually, separating from other capital inflows, only after the year 1996/97. On the other hand, mainly data from local authorities such as National bank of Ethiopia (NBE) and Ministry of Finance and Economic Development (MOFED) is mainly used

concerning other variables, and also data from Ethiopian Economic Association (EEA) and United Nation Conference on Trade and Development (UNCTAD) has been employed.

3.3.   Method of Data Analysis

The method of data analysis and associated process is discussed in to two categories aiming to better understand and identify the effects and characteristics of the explanatory variables along with their respective explained variables. The first one is associated with assessing the effect of remittance on economic growth and the other assess the effect of remittance on investment along with other explanatory variables in each of the regressions. Both descriptive and econometric methods of data analysis are employed. With regard to the former analysis, the study has applied descriptive statistics tools such as charts and different types of graphs. On the other hand, the econometric part is analyzed using E-view version 9 statistical software packages.

3.4.   Model specification

3.4.1. Remittance Effect on Economic Growth

The study model specification is based on theoretical foundation of the augmented Solow and endogenous growth models for economic growth equation. The Solow growth model is used since it is designed to show how growth in the capital stock, labor force and advances in technology interact in an economy (Mankiw, 2010). Thus, the growth function is expressed as:

$$Y = f(K, HK, LF, A) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equation\ 3.1$$

Where, Y is a proxy for economic growth, K denotes capital stock, HK denotes human capital, LF denotes labor force and A denotes technology.

As the above detailed literature on remittance describes, the potential effect of remittance on economic growth is expressed by effect of remittance on the determinants of economic growth (capital accumulation, labor force growth, and technological progress) identified by the growth

models. In addition, many examined the effect of remittance on economic growth by incorporating it to the growth model .Thus following the footstep of these works, remittance is included in to the growth model as follows:-

$$Y = f(K, HK, LF, RM, A) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{equation 3.2}$$

Where RM denotes remittance inflow,

The next step is expressing the variables in natural logarithmic form, by doing so, the study attempts to look at the relative contribution and/or elasticity of each variable to the growth process. Accordingly, the final model of regression is the specified as follows:-

$$\ln Y = \gamma_0 + \gamma_1 \ln K + \gamma_2 \ln HK + \gamma_3 \ln LF + \gamma_4 \ln RM \ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{equation 3.3}$$

In many cases, remittance flows are treated in similar manner to FDI and other international capital flows. For example, Ratha and Mohapatra (2007) state remittance flows to be an important source of external finance for developing countries. Thus, in order to understand the effect of remittance on economic growth in comparison with other capital flows, the model included Foreign Direct Investment (FDI) and Official Development Assistant (ODA).

$$\ln Y_t = \gamma_0 + \gamma_1 \ln K + \gamma_2 \ln HK + \gamma_3 \ln LF + \gamma_4 \ln RM + \gamma_5 \ln FDI + \gamma_6 \ln ODA \ldots\ldots\ldots\text{equation 3.4}$$

According to the empirical literatures economic growth is affected by variables in addition to specified in the above model. Thus among this Government Expenditure (GEX) is included to the model that would also increase the robustness of the model. Furthermore representing the variables with their associated proxies is presented as follows.

$$\ln RGDP_t = \gamma_0 + \gamma_1 \ln Gcf_t + \gamma_2 \ln Ent_t + \gamma_3 \ln Lf_t + \gamma_4 \ln RM_t + \gamma_5 \ln Fdi_t + \gamma_6 \ln Oda_t + \gamma_7 \ln Gex_t + \varepsilon_t. \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{equation } 3.5$$

Where ε_t is the idiosyncratic error which is assumed to be independently and identically distributed with mean zero and variance δ^2. Moreover, $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6 \, and \, \gamma_7$ are the elasticity coefficients with respect GCF, ENRT, LF, RM, FDI, ODA and GEX respectively.

Description of variables and expected result: -

$\ln RGDP$; is natural log of real gross domestic product as a proxy for measuring economic growth, in most economic growth literature, real GDP is used as the proxy for economic growth and Mankiw *et al. (*1992) and Barro & Sala-i-Martin (2004) are among those.

$\ln Gcf$: is natural log of gross capital formation, used as a proxy for investment on physical capital. Due to the absence of data showing capital stock for most of developing countries including Ethiopia the study used gross capital formation as a proxy. Similarly many used the same to measure the underlined variable; Abdullaev (2011) and Shera and Meyer (2013) can be mentioned. A positive effect on economic growth is expected.

$\ln Ent$; is natural log of expenditure to health and education proxies for human capital ,which is the collective of skills, knowledge, or other intangible assets of individuals that can be used to create economic value for the individuals, their employers, or their community. It is difficult to measure human capital in economics. As a result researchers use different proxy to human capital (i.e. school enrolment (primary, secondary, tertiary level or literacy rate), life expectancy or expenditure on education and health) to measure its effect on economic. Therefore, this study has used expenditure on health and education as a proxy for human capital. The sign is also expected to be positive.

$\ln Lf$; is natural log of labor force, refers to the total amount of labor force in the economy.

$\ln RM$: is natural log of Remittance is the interest variable

$\ln Fdi$: is natural log of foreign direct investment, foreign direct investment is widely viewed as primary source of technology and knowledge which enables the recipient country to exploit the

experience of others for their development. The empirical literature that examined the impact of FDI on growth has provided more or-less consistent findings affirming a significant positive impact on economic growth. Chami et al (2005) state that foreign direct investment is positively correlated with output growth during the 1990s.

$\ln Gex$: Government consumption expenditure proxies for government expenditure in the economy, which is expected to distort private decision. Thus increase in government consumption expenditure will negatively affect growth rate of output per worker (Barro and Sala-i-Martin 2004). Empirically, Barro and Sala-i-Martin (2004) have found a negative and significant relationship between government consumption expenditure and economic growth. The same result is also expected in this study.

$\ln ODA$-Official development assistant, its effect on economic growth is inconclusive.

3.4.2. Remittance Effect on Investment

In addition to the analysis on, the effect of remittance on overall economic growth the study also assess whether remittance effect on economic growth channels through investment on physical capital formation or not. For this purpose, remittances along with other independent variables regressed against gross capital formation. In addition to variables discussed above (except ODA and LF), interest rate ($\ln Int$,), trade openness measured by the sum of import and export ($\ln XM$) and total domestic credit ($\ln Dct$) are introduced as explanatory variables.

$$\ln Gcf_t = \gamma_0 + \gamma_1 \ln Ent_t + \gamma_2 \ln RM_t + \gamma_3 \ln Dct_t + \gamma_4 \ln Fdi_t + \gamma_5 \ln XM_t + \gamma_6 \ln Gex_t + \gamma_7 \ln Int_t$$
$$+ \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots equation\ 3.6$$

Where, μ_t is the idiosyncratic error which is assumed to be independently and identically distributed with mean zero and variance δ^2. And $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6$ and γ_7 are the elasticity coefficients with respect ENT, RM, FDI, DCT, XM, GDP, GEX and INT respectively.

3.5.   Econometric Estimation Techniques

3.5.1. Unit-root Test

Empirical studies based on time series data assume, the underlying time series data used for drawing inference to be stationary. A time series or a stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. Stationarity concept can be explained as follows, let Yt be a stochastic time series with these properties:

$$Mean: E(Yt) = \mu$$
$$Variance: \text{var}(Yt) = E(Yt - \mu)2 = \sigma 2$$
$$Covariance: \gamma k = E[(Yt - \mu)(Yt+k - \mu)]$$

Where γk, the covariance (or autocovariance) at lag k, is the covariance between the values of Yt and Yt+k, that is, between two Y values k periods apart. If k = 0, we obtain $\gamma 0$, which is simply the variance of Y (= $\sigma 2$); if k = 1, $\gamma 1$ is the covariance between two adjacent values of Y.

A certain time series Yt to be stationary, the mean, variance, and autocovariances of it values at a certain period apart say m (Yt+m) must be the same as those of itself at time t (Yt). In short, if a time series is stationary, its mean, variance, and autocovariance (at various lags) remain the same no matter at what point we measure them; that is, they are time invariant. Such a time series will tend to return to its mean (called mean reversion) and fluctuations around this mean (measured by its variance) will have broadly constant amplitude. If a time series does not fulfill the above criteria, it is referred to be nonstationary time series .In other words, a nonstationary time series will have a time varying mean or a time-varying variance or both.

Why are stationary time series so important? Because if a time series is nonstationary, we can study its behavior only for the time period under consideration. Each set of time series data will therefore be for a particular episode. As a consequence, it is not possible to generalize it to other time periods. Therefore, for the purpose of forecasting, nonstationary time series may be of little

practical value. The characteristic of a time series has a far reaching implication for economic and policy formulation and implementation. When a series has a unit root, any shock to the data series is long lasting. Hence, there will be a cumulative divergence from the mean/trend of the series. The instability exhibited by this series will tend to render any policy formulated and implemented on the basis of a model estimated using such data series inefficient. This is because what drives any policy formulation and implementation is the clear assumption of the stability of the series (Nkoro and Uko 2016).

Furthermore, regression of a non-stationary series on another non-stationary series leads to what is known as spurious regression. Thus testing stationerity on time series is necessary. The study applied the popular and most widely used Augmented Dickey–Fuller (ADF) test that integrated the test for a non-stationary stochastic process that could be Trend Stationary (deterministic) Process (TSP) or Difference Stationary Process (DSP).

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{t=1}^{m} \alpha Y_{t-1} + \varepsilon_{t.} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equation\ 3.7$$

Where εt is a pure white noise error term, Δ is the first difference operator while Yt is nonstationary, its first difference is stationary where Yt−1 = (Yt−1 − Yt−2), Yt−2 = (Yt−2 − Yt−3), etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term in (equation 3.7) is serially uncorrelated.

In ADF test, the null hypothesis is δ = 0 that is a unit root the time series is nonsationary the alternative hypothesis is that is less than zero that is, the time series is stationary

In practice, ADF value with less than its critical value shows that the underlying series is non-stationary. Contrarily, when an ADF value that is greater than its critical value shows that the underlying series is stationary. However, the null hypothesis cannot be rejected about non-stationarity based on ADF test only, since its power is not strong as such. This decision can be verified using other related tests, such as Kwiatkowski-Phillips-Schmidt-Shin (1992) (KPSS) or

Philips-Perron (PP) test. The study further employs PP test that use nonparametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms. It has the same null hypothesis as ADF, and its asymptotic distribution is the same as the ADF test statistic.

3.5.2. Co-Integration Test

Most of times series variables has proved to be nonstationary , One way of resolving non-stationary variables in a model that may lead to get spurious results, is to difference the data in order to achieve stationarity of the variables. Hence, using differenced variables for regressions imply loss of relevant long run properties or information of the equilibrium relationship between the variables under consideration and the regression equation only gives us the short-run relationship between the variables((Nkoro and Uko 2016). This means that we have to devise a way of retaining the relevant long run information of the variables since researchers are mainly interested in long-run relationships between the variables under consideration. Cointegration makes it possible to retrieve the relevant long run information of the relationship between the considered variables that had been lost on differencing.

Cointegration test examines how time series, which though may be individually non-stationary and drift extensively away from equilibrium can be paired such that the workings of equilibrium forces will ensure they do not drift too far apart. That is, cointegration involves a certain stationary linear combination of variables which are individually non-stationary but integrated to an order, I (d). Cointegration is an econometric concept that mimics the existence of a long-run equilibrium among underlying economic time series that converges over time. Thus, cointegration establishes a stronger statistical and economic basis for empirical error correction model, which brings together short and long-run information in modeling variables. Testing for cointegration is a necessary step to establish if a model empirically exhibits meaningful long run relationships.

In applied econometrics, the Granger (1981) and, Engle and Granger (1987), Autoregressive Distributed Lag (ARDL) cointegration technique or bound test of cointegration(Pesaran and Shin

1999 and Pesaran et al. 2001) and, Johansen and Juselius(1990) cointegration techniques have become the solution to determining the long run relationship between series that are non-stationary, as well as reparameterizing them to the Error Correction Model (ECM). The ARDL) cointegration technique or bound test of cointegration (Pesaran and Shin 1999 and Pesaran et al. 2001) approach to cointegration or bound procedure for a long run relationship can be applied irrespective of whether the underlying variables are I(0), I(1) or a combination of both which is not the case for Engle and Granger(1987). This approach allows both the dependent and independent variables to enter the model with lags, thereby allowing the past values of variables to determine its present values For reasons discussed above and other advantages to be enumerated latter , the study has employed Autoregressive Distributed Lag(ARDL) cointegration technique or bound test of cointegration, based on the works of Pesaran and Shin (1999) and Pesaran et al. (2001), for analyzing the short run and long run relation between the chosen regressors and regressands .

The ARDL approach for cointegration helps in identifying the cointegrating vector(s). That is, each of the underlying variables stands as a single long run relationship equation. If one cointegrating vector (i.e the underlying equation) is identified, the ARDL model of the cointegrating vector is reparameterized into ECM. The reparameterized result gives short-run dynamics (i.e. traditional ARDL) and long run relationship of the variables of a single model. The re-parameterization is possible because the ARDL is a dynamic single model equation and of the same form with the ECM.

Nkoro and Uko (2016) summarized some of the advantages related to ARDL approach for cointegration. First, since each of the underlying variables stands as a single equation, endogeneity is less of a problem in the ARDL technique because it is free of residual correlation (i.e. all variables are assumed endogenous). Also, it enable us analyze the reference model. Second, when there is a single long run relationship, the ARDL procedure can distinguish between dependent and explanatory variables. That is, the ARDL approach assumes that only a single reduced form equation relationship exists between the dependent variable and the exogenous variables (Pesaran et al. 2001). The other major advantage of this approach lies in its identification of the cointegrating vectors where there are multiple cointegrating vectors. And,

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finally the Error Correction Model (ECM) can be derived from the ARDL model through a simple linear transformation, which integrates short run adjustments with long run equilibrium without losing long run information. The associated ECM model takes a sufficient number of lags to capture the data generating process in general to specific modeling frameworks.

The ARDL model for cointigration is specified as follows:-

$$\Delta Y_t = \alpha + \sum_{i=1}^{k} \gamma_i \Delta Y_{t-1} + \sum_{i=1}^{k} \gamma_2 \Delta X_{t-i} + \delta_1 Y_{t-1} + \delta_2 X_{t-1} + u_t \ldots \ldots \ldots \ldots \ldots \ldots equation\ 3.8$$

Where, Δ refers to first difference operator, Y_t vector of dependent variables, X_t vector of k determinants of Y_t and u_t refers to residual error term which is assumed to be white noise having mean zero and variance covariance of σ^2

3.5.2.1.   Testing cointegration using ARDL or Bound Testing approach

The ARDL cointigration for the study can be specified in a similar manner with equation 3.8 as follows:-

For Economic growth and remittance

$$\Delta LRGDP_t = \alpha_0 + \sum_{i=1}^{k} \gamma_i \Delta LRGDP_{t-1} + \sum_{i=1}^{k} \gamma_{2t} \Delta LGCF_{t-i} + \sum_{i=1}^{k} \gamma_{3t} \Delta LENRT_{t-i} + \sum_{i=1}^{k} \gamma_{4t} \Delta LLF_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{5t} \Delta LRM_{t-i} + \sum_{i=1}^{k} \gamma_{6t} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \gamma_{7t} \Delta LODA_{t-i} + \sum_{i=1}^{k} \gamma_{9t} \Delta LGEX_{t-i}$$

$$+ \delta_1 LRGDP_{t-1} + \delta_2 LGCF_{t-1} + \delta_3 LENRT_{t-1} + \delta_4 LLF_{t-1} + \delta_5 LRM_{t-1}$$

$$+ \delta_6 LFDI_{t-1} + \delta_7 LODA_{t-1} + \delta_8 LTRD_{t-1} + \delta_9 LGEX_{t-1}$$

$$+ \varepsilon_t \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots equation\ 3.9$$

The parameters $\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_4, \gamma_5, \gamma_7, \gamma_8$ and γ_9 denote the short-run dynamics of the model to be estimated via the error correction framework and δ_1, δ_2, δ_3, δ_4, δ_5, δ_6, δ_7, δ_8 and δ_9 represent the long-run parameters. Moreover, α_0 is the constant term (drift term) in the ARDL model and ε_t is the white noise error term.

For Remittance and Investment

$$\Delta LGCF_t = \alpha_0 + \sum_{i=1}^{k} \gamma_i \Delta LGCF_{t-1} + \sum_{i=1}^{k} \gamma_{2t} \Delta LENRT_{t-i} + \sum_{i=1}^{k} \gamma_{3t} \Delta LRM_{t-i} + \sum_{i=1}^{k} \gamma_{4t} \Delta LFDI_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{5t} \Delta LGEX_{t-i} + \sum_{i=1}^{k} \gamma_{6t} \Delta LTRD_{t-i} + \sum_{i=1}^{k} \gamma_{7t} \Delta LRGDP_{t-i} + \sum_{i=1}^{k} \gamma_{8t} \Delta INT_{t-i}$$

$$+ \delta_1 LGCF_{t-1} + \delta_2 LENRT_{t-1} + \delta_3 LRM_{t-1} + \delta_4 LFDI_{t-1} + \delta_5 LODA_{t-1}$$

$$+ \delta_6 LTRD_{t-1} + \delta_7 LRGDP_{t-1} + \delta_8 INT_{t-1} + \varepsilon_{t.} \dots \dots \dots \dots \dots \dots \dots \dots equation\ 3.10$$

The ARDL cointegration approach follows three stages to estimate the existence of long run relationship among underlying variables.

At the first stage, the existence of the long-run relation between the variables under investigation is tested by computing the Bound F-statistic (bound test for cointegration) in order to establish a long run relationship among the variables. This bound F-statistic is carried out on each of the variables as they stand as endogenous variable while others are assumed as exogenous variables. By that hypothesis testing of the long-run relationship among the underlying variables will be under taken. In order to test the presence of long run relationship between the underlying variables, the above equations is estimated using OLS.

The hypothesis that the coefficients of the lag level variables are zero is to be tested. The null hypothesis of non-existence of long-run relationship is defined by;

Ho: $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = \delta_8 = \delta_9 = 0$*(null, i.e. the long run relationship does not exist);*

H1: $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 \neq \delta_8 \neq \delta_9 \neq 0$*(alternative, i.e. the long run relationship exists)*

The hypothesis is tested by means of the F- statistic (Wald test). The distribution of this F-statistics is non-standard, irrespective of whether the variables in the system are I(0) or I(1). The critical values of the F-statistics for different number of variables (K), and whether the ARDL model contains an intercept and/or trend are available in Pesaran and Pesaran (1996), and Pesaran et al. (2001). They give two sets of critical values. One set assuming that all the variables are I(0) (i.e. lower critical bound which assumes all the variables are I(0), meaning that there is no cointegration among the underlying variables) and another assuming that all the variables in the ARDL model are I(1) (i.e. upper critical bound which assumes all the variables are I(1), meaning that there is cointegration among the underlying variables). For each application, there is a band covering all the possible classifications of the variables into I (0) and I (1).

If the relevant computed F-statistic for the significance of the level variables in the equations(3.9 and 3.10) δ_1 , δ_2, δ_3 , δ_4, δ_5, δ_6, δ_7, δ_8 and δ_9 falls outside this band, a conclusive decision can be made, without the need to know whether the underlying variables are I(0) or I(1), or fractionally integrated. That is, when the computed F-statistic is greater than the upper bound critical value, then the *H0* is rejected (the variables are cointegrated). If the F-statistic is below the lower bound critical value, then the *H0* cannot be rejected (there is no cointegration among the variables).

However, if the computed statistic falls within (between the lower and upper bound) the critical value band, the result of the inference is inconclusive and depends on whether the underlying variables are I(0) or I(1). It is at this stage in the analysis that the investigator may have to carry out unit root tests on the variables (Pesaran and Pesaran, 1996). If the variables are I(2), the

computed F-statistics of the bounds test are rendered invalid because they are based on the assumption that the variables are I(0) or I(1) or mutually cointegrated (Chigusiwa et al., 2011). To Avoid such unnecessary waste of effort, it may be advisable to first perform unit roots, though not as a necessary condition, in order to ensure that none of the variables are I(2) or beyond, before carrying out the bound F-test.

If the result from the above F-test approves the existence of long run relationship between the underlying variables, the second step will follow, that is the finding the appropriate lag length for each of the underlying variables in the ARDL model. This is very important in order to have Gaussian error terms (i.e. standard normal error terms that do not suffer from non-normality, autocorrelation, heteroskedasticity etc.) (Nkoro and Uko (2016). Thus, it is necessary to determine the optimum lag length (k) by using proper model order selection criteria such as; the Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC) or Hannan-Quinn Criterion (HQC). The study will employ the former two Model selection criteria's (AIC and SBC). The model with the smallest AIC, SBC estimates or small standard errors and high R^2 performs relatively better. The estimates from the best performed become the long run coefficients. Once cointegration is established the ARDL Long run model the study can be estimated as specified discussed below.

3.5.2.2. The Long Run Model

For Remittance and Economic Growth

$$LRGDP_t = \alpha_0 + \sum_{i=1}^{k} \delta_1 LRGDP_{t-1} + \sum_{i=1}^{k} \delta_2 LGCF_t + \sum_{i=1}^{k} \delta_3 LENRT_t + \sum_{i=1}^{k} \delta_4 LLF_{t-i} + \sum_{i=1}^{k} \delta_5 LRM_t$$

$$+ \sum_{i=1}^{k} \delta_6 LFDI_t + \sum_{i=1}^{k} \delta_7 LODA_t + \sum_{i=1}^{k} \delta_8 LTRD_t + \sum_{i=1}^{k} \delta_9 LGEX_t + \varepsilon_{t..} \, equation \; 3.11$$

Where k is the number of optimum lag order,

For Remittance and Investment

$$LGCF_t = \alpha_0 + \sum_{i=1}^{k} \delta_1 LGCF_{t-1} + \sum_{i=1}^{k} \delta_2 LENRT_{t-i} + \sum_{i=1}^{k} \delta_3 LRM_{t-i} + \sum_{i=1}^{k} \delta_4 LFDI_{t-i}$$

$$+ \sum_{i=1}^{k} \delta_5 LODA_{t-i} + \sum_{i=1}^{k} \delta_6 LTRD_{t-i} + \sum_{i=1}^{k} \delta_7 LRGDP_{t-i} + \sum_{i=1}^{k} \delta_8 INT_{t-i}$$

$$+ \varepsilon_t. \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots equation\ 3.12$$

3.5.2.3.   The Short Run Dynamics

The last step involves reparameterization of ARDL Model into Error Correction Model (ECM). The unrestricted error correction model associated with the ARDL model can be obtain by rewriting equation 3.8 or, 3.9 and 3.10 (for this study) in terms of the lagged levels and the first differences of Y_t and $X_{1t}, X_{2t}. . . X_{kt}$. By the specification of ECM, we now have both long-run and short-run information incorporated.

For Remittance and Economic Growth

$$\Delta LRGDP_t = \alpha_0 + \eta EC_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta LRGDP_{t-1} + \sum_{i=1}^{k} \gamma_{2t} \Delta LGCF_{t-i} + \sum_{i=1}^{k} \gamma_{3t} \Delta LENRT_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{4t} \Delta LLF_{t-i} + \sum_{i=1}^{k} \gamma_{5t} \Delta LRM_{t-i} + \sum_{i=1}^{k} \gamma_{6t} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \gamma_{7t} \Delta LODA_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{8t} \Delta LTRD_{t-i} + \sum_{i=1}^{k} \gamma_{9t} \Delta LGEX_{t-i} + \mu_t. \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots equation\ 3.13$$

Where, η is the coefficient for the Error Correction term that measures the quantitative importance of the error correction term.

For Remittance and Investment

$$\Delta LGCF_t = \alpha_0 + \eta EC_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta LGCF_{t-1} + \sum_{i=1}^{k} \gamma_{2t} \Delta LENRT_{t-i} + \sum_{i=1}^{k} \gamma_{3t} \Delta LRM_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{4t} \Delta LFDI_{t-i} + \sum_{i=1}^{k} \gamma_{5t} \Delta LDCT_{t-i} + \sum_{i=1}^{k} \gamma_{6t} \Delta LTRD_{t-i} + \sum_{i=1}^{k} \gamma_{7t} \Delta LGDP_{t-i}$$

$$+ \sum_{i=1}^{k} \gamma_{8t} \Delta INT_{t-i} + \mu_{t.} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots equation\ 3.14$$

 The term ECt as the speed of adjustment parameter or feedback effect is derived as the error term from the cointegration models (3.13 and 3.14) whose coefficients are obtained by normalizing the equation on $LRGDP_t$ (3.9) and $LGCF_t$ (3.10) respectively. The ECt shows how much of the disequilibrium is being corrected, that is, the extent to which any disequilibrium in the previous period is being adjusted in $LRGDP_t$ and $LGCF_t$. A positive coefficient indicates a divergence, while a negative coefficient indicates convergence. A negative coefficient is expected to confirm a move toward the long run equilibrium correcting disequilibrium. The ARDL models and its associated ECM can be estimated by the OLS method.
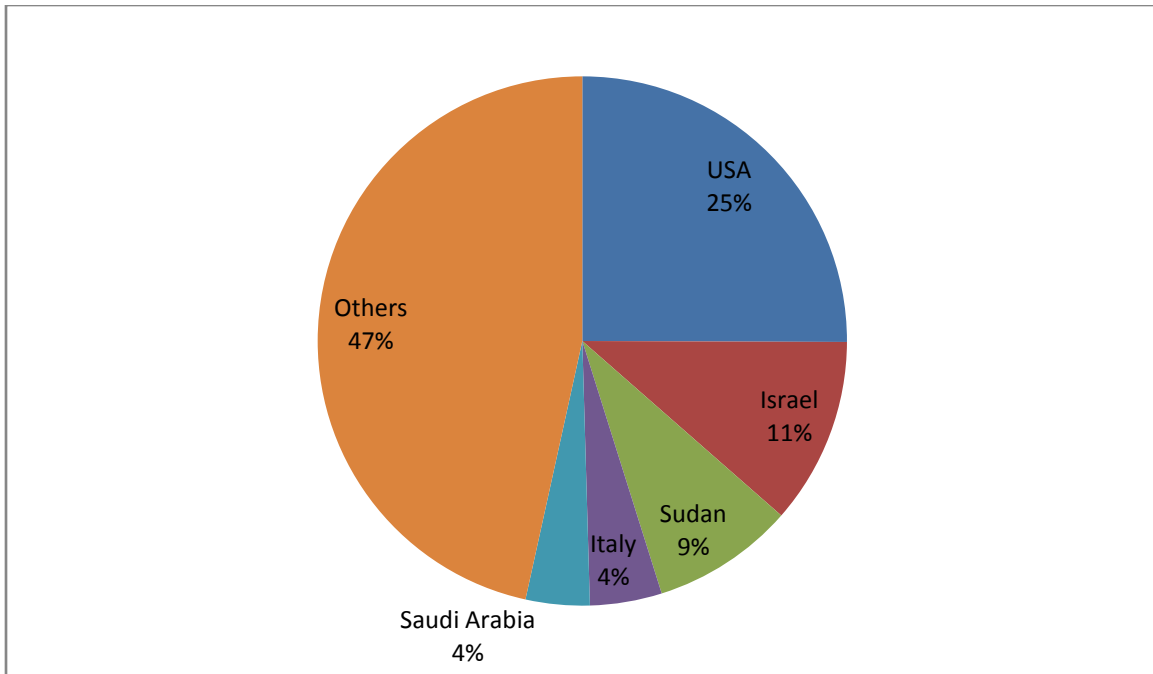
CHAPTER FOUR

4. RESULT AND DISCUSSION

This chapter contains, both 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 graphs and charts, are used to describe the variables of interest in the model. The econometric analysis begins by testing the necessary tests such as stationary tests, diagnostic tests and bound test. After having made the necessary tests, both the long run and short run models are estimated using ARDL and Error Correction Models respectively. Then, interpretation and discussion are made based on the model results.

4.1. Descriptive Analysis

4.1.1. Recorded Remittances, Overall Volumes and Trends

A noticeable degree of out-migration in Ethiopia started in the 1970s following the revolution and the political unrests afterward. During the early days, migration was limited to the urban elite, especially the young and the educated, who for political reasons sought refuge in Western countries. Gradually, however, migration has become an aspiration of most urban people, mainly for economic reasons. After the mid 1980s, even rural peasants began flocking to the Middle East and the Gulf region in search of jobs and better pay. Currently, over one million Ethiopians are believed to reside abroad (Aredo, 2005).

The data on the total number of migrants stock are not consistence through the sources, According to UNICEF migration profile 2013, 718,241 Ethiopian live in different parts of the world by the year 2013. In terms of country of destination, United States of America (USA), Israel, Sudan, Italy and Saudi Arabia are the top five countries of destination for Ethiopian migrants. USA is the the leading destination for Ethiopian migrants (25% percent of total migrants), followed by israel (11.4% percent), sudan(8%) percent), Italy (4.3 percent), and Saudi Arabia (3.9% percent). As seen in the diagram below the top five countries of destination accounts for more than 53% of Ethiopian migrants.

Figure 4. 1 The Number of Ethiopian Migrants by country of destination (%)

One of the positive effects of out migration of people is remittance money that will be sent back to home country. Like many migrants from developing countries, Ethiopian migrants also send money back to their home countries. As it can be observed from figure 4.1, the total amount of remittance inflow started to show significant increment, mainly since 2003. Between 1996/97 and 2003/04 remittance flows have steadily grown from 131.5 million USD to 333.46 million USD. By 2004/05, remittance inflow had reached USD 582.72 million showing more than 74% rise in from its previous value in 2003/04. A critical examination of the figure reveals that the inflow of remittances leaps strangely doubling and tripling the 2004/05 figure of USD 582.72 million in to USD 1,055.51 million in 2006/07 and 2007/08 USD 1,787.66 million which is associated with the celebration of the Ethiopian Millennium. This tremendous increase, however witnessed a slight slowdown in 2008/09 after reaching nearly USD 1,802.21million due to the global financial crisis that occurred in the western economies, which are the main source of remittance for Ethiopia.
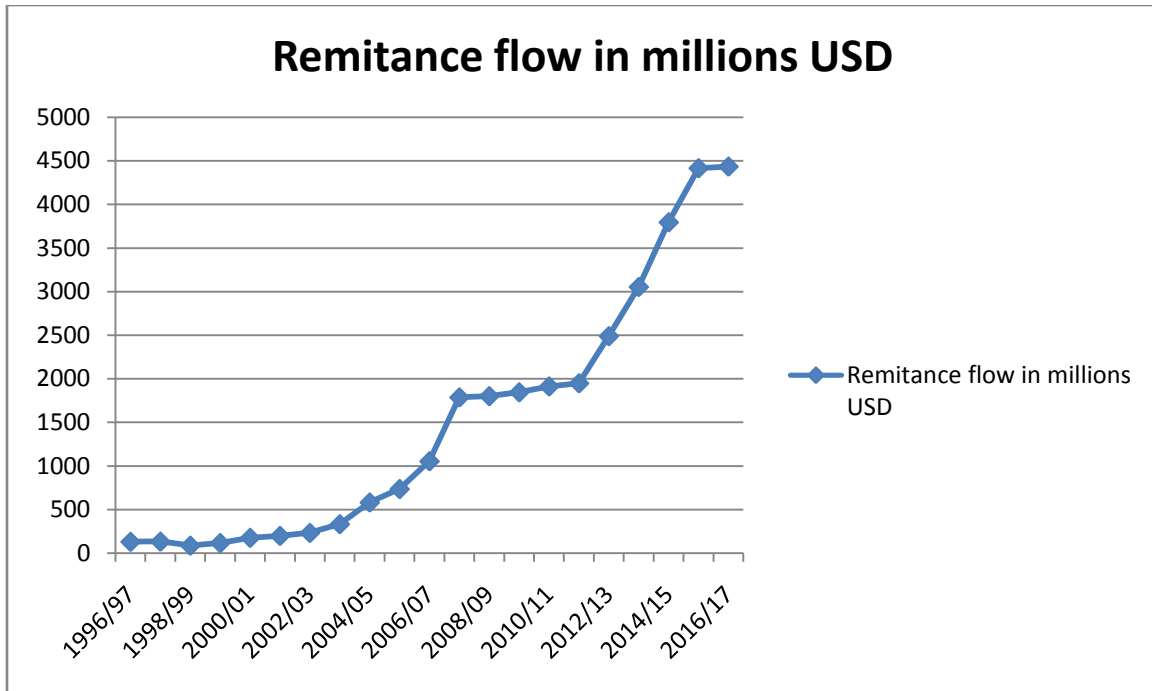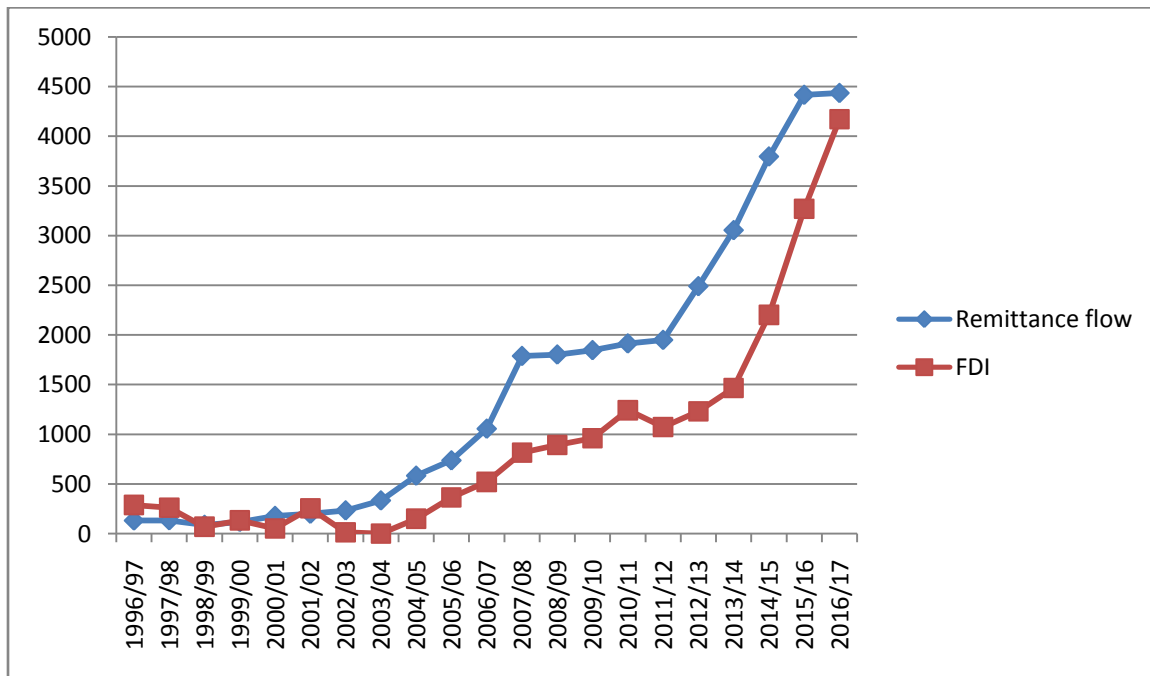
Source: NBE

Figure.4. 2.Amount of Remittance Received (Millions of USD)

in addition to balancing deficit in recipient countries remittances play an important role as reliable and most stable sources of foreign exchange earnings and financial resource compared to official development assistance (ODA) and foreign direct investments (FDI)) this is also true for the Ethiopian economy, which characterized by production of predominantly primary and agricultural product which has a volatile price and demand subject to external shocks in the international market. In contrast the country import mainly consists of necessity goods and capital goods. As per the NBE 2014/15 annual report, the major items imported to the county were consisted of 35.3% of capital goods, 18.8% of fuel and **16.3** % of raw material. The same report states that the country's balance of payments exhibited a deficit amount of USD 521.4 million which is a much higher value than the previous period amount of USD 96.9 million. This is mainly attributed to the trade deficit widened by 29.1 percent owing to a 20 percent growth in merchandise imports in contrast with an 8.5 percent drop in merchandise exports. The country's current account deficit (including official transfers) widened to USD 8 billion which is estimated to be 12.8% of the GDP. This deficit are in somehow balanced by the capital account surplus due to growth in official long term loans, other public long term net capital inflows and expansion in

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FDI. The other source for balancing the deficit was the net private transfer increased by 20% in the period compare to the previous year.

The importance of remittance to the Ethiopian economy becomes vividly apparent when the remittance figures are compared to other external financial income sources of Ethiopia. As the previous discussion indicated, Ethiopia has experienced a continuing surge in inward remittance s over the past decades. Likewise, government has been encouraging the FDI inflows by making investment climates conducive to the foreign investors. However, remittance proved to be the major source of foreign exchange surpassing other source of foreign capitals.

Source: NBE and World Development Indicators

Figure.4. 3 Flows of Remittance and FDI

As figure 4.3 reveals, prior to 2001 FDI transfer had over passed the remittance, while after the surge of remittance flow to the country after 2003/04, remittance had over passed FDI. Following this period remittance flows had been moderately high till 2008/09 After which the difference between remittance and FDI had been wide until recently FDI flow seems to close up this gap through increasing trend accompanied with sluggish growth in remittance growth. One

of the remarkable features of remittances in the literature of growth is its resilience. Compared to other flows, remittances are resilient and stable. From the graph below one can notice that compared to official development assistance (ODA) and Export earning, remittance is more stable than the others.
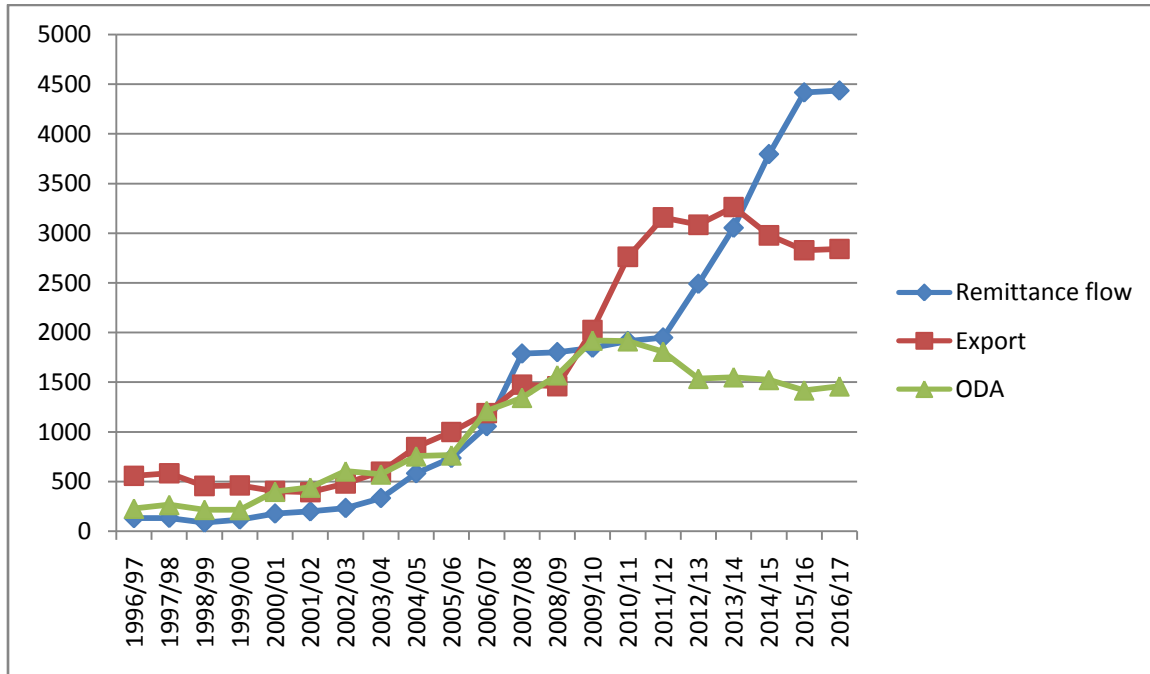
Source: NBE and World Development Indicators

Figure.4. 4 Flows of remittance, ODA and Export earning

4.2. Econometrics Results

4.2.1. Unit Root Test

Empirical studies based on time series data assume, the underlying time series data used for drawing inference to be stationary. However most of the time series data tends to be non-stationary. As discussed in the previous chapter in detail stationarity test should be done on the series in order to avoid spurious regression, which is the case in regressing of non-stationary series on another none stationery series. Thus before running ARDL model, a unit root test carried out using the standard Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests.

Table 4. 1 **Result of unit root test using Augmented Dickey Fuller (ADF) test.**

Variables	ADF t-statistic at level I(0)		ADF t-statistic at first difference I(1)		Order of integration I(d)
	Intercept (C)	Intercept and trend (C&T)	Intercept (C)	Intercept and trend (C&T)	
LRGDP	2.836156	0.687664	-4.756973***	-6.020826***	I(1)
LNGCF	1.042794	-0.736407	-5.675151***	-6.509018***	I(1)
LNENRT	2.227176	--1.988263	-2.560223	-5.625765***	I(0)
LNLF	0.750903	-2.496778	-5.495423***	-5.689538***	I(1)
LNRM	-0.197894	-3.453583*	-4.286971***	-4.238255**	I(1)
LFDI	-1.584793	-3.831198**	-6.494816***	-6.386407***	I(1)
LNODA	-0.067687	-3.208825	-6.336602***	6.208370***	I(1)
LXM	0.671940	-3.650802**	-2.464560	-2.357624	I(0)
LGEX	2.500684	-1.137851	-3.721380***	-4.378965***	I(1)
LINT	-3.451449**	-4.096900**	-2.716329	-2.858094	I(0)
LDCT	4.195190***	0.942818	-2.917340**	-4.100659***	I(0)
LGDP	1.396825	-1.144532	-2.916967*	-3.556538*	I(1)

Source: E-views 9 computation.

N.B *, ** and *** referrers statistical significance at 10%, 5% and 1% level of significance, respectively.

Equation 3.7 is estimated in order to check the ststionarity of the series. The null hypothesis, that the series is a unit-root or non-stationary. The decision making rule is, When ADF value with less than its critical value shows that the underlying series is non-stationary. Contrarily, when an ADF value that is greater than its critical value shows that the underlying series is stationary. The MacKinnon (1996) one-sided p-values are used to compare ADF calculated values and Schwarz Info Criterion (SIC) is employed to determine the optimal lag length in testing unit-root test of variables.

As table 5.1 above indicates, the null hypothesis of no stationarity (unit root) cannot be rejected for all variables in level (I (0)) except for TRD and LINT which are stationary at 1% and 5% level of significance. However, every variable become stationary either with trend or without trend once they are first differenced. This indicates that none of the above variables are

integrated of order two (I (2)), which is a pre condition to use ARDL model. The Phillips Perron test is also tested and also indicates that none of the above variables are integrated of order two (I (2)), (refer Appendix 1).

4.2.2. Bounds Test for Long Run Relationship

After checking the stationarity of the variables, the next step is checking the bound test for co-integration. In the ARDL approach to Co-integration, the first step is to test the presence of co-integration or long run relationship among the variables. This test for the long run relationship is done using the F-statistic. Given the annual nature of the data; it is recommended that the optimal lag length for the ARDL model is maximum two lags. Moreover, AIC is used to determine the optimal lag because of small sample size at hand. The test procedure starts with estimating an OLS regression for the first difference part of equation (equation 3.9 and 3.10) and then test for the joint significance the parameters of the lagged level variables when added to the first difference regression. Pesaran (2001) explained that this OLS regression in first difference is of no direct interest to the bounds co-integration test, it is rather used to simply look at the joint significance of the variables. The F-test statistics, which is derived from this regression output, tests the joint null hypothesis that the coefficients of lagged level variables are zero meaning; there is no long run relationship.

Remittance and Economic growth

As it is depicted in table below, the calculated F-statics i.e. 5.029945 is higher than the upper bounds of the critical values at all significance levels. This implies that we reject the null hypothesis of (there is no Long run relationships between the dependent and explanatory variables δ_1 , δ_2, δ_3 , δ_4, δ_5, δ_6 , δ_7, δ_8 , $\delta_9 = 0$) and we accept the alternative hypothesis that is there is long run relationship between variables δ_1 , δ_2, δ_3 , $\delta_4, \delta_5, \delta_6, \delta_7, \delta_8$, $\delta_9 \neq 0$.

Table 4. 2 **Bounds Test for Long Run Relationship between Economic growth and explanatory variables**

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.029945	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

Source -Model computation result

Remittance and Investment

The same F-test is employed to test the presence of co-integration or long run relationship among the dependent variable Investment on physical capital formation and the explanatory variables as represented in equation 3.10. As it is depicted in table below, the calculated F-statics i.e. 5.297260 is higher than the upper bounds of the critical values at all significance levels. The same is done here and null hypothesis (there is no long run relationships between the dependent and explanatory variables δ_1 , δ_2, δ_3 , δ_4, δ_5, δ_6 , δ_7, δ_8 , $\delta_9 = 0$)) is rejected.

Table 4. 3 **Bounds Test for Long Run Relationship between Investment and explanatory variables**

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.297260	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

Source -Model computation result

4.2.3. Diagnostic Tests of the Model

Before any estimation is undertaken, model diagnostic tests should be tested. To check the verifiability of the estimated long run model some diagnostic tests are undertaken. These includes serial correlation test (Brush and God fray LM test), functional form (Ramsey's RESET) test, normality (Jaque-Berra test) and Hetroskedasticity y (Breusch-Pagan-Godfrey).

Remittance and Economic Growth

Table 4. 4 **Diagnostic taste for Economic growth and explanatory variables**

Test Statics	LM version	F-version
Serial correlation	CHSQ(1)=1.1325(0.2872)	F(1,19)=0.6971(0.4141)
Functional form	CHSQ(1)= 0.8252(0.4195)	F(1,19)=0.681020 (0.4195)
Normality	CHSQ(2)=0.60(0.99)	Not applicable
Hetrocedasticity	CHSQ(12)= 2.3729(0.99)	F(12,19)= 0.1456(0.99)

Source: Model computation

Remittance and Investment

Table 4. 5 Diagnostic **taste for Investment and explanatory variables**

Test Statics	LM version	F-version
Serial correlation	CHSQ(1)=0.0001(0.99)	F(1,11)=0,0004(0.98)
Functional form	CHSQ(1)=1.78(0.11)	F(1,8)= 3.168(0.11)
Normality	CHSQ(2)=0.553(0.758)	Not applicable
Hetroskedasticity	CHSQ(21)=23.2017(0.366)	F(21,9)=1.015(0.33)

Source: Model computation

From Table (4.4 and 4.5) the test for serial correlation is the Langrangian Multiplier (LM) test for autocorrelation, the test for functional misspecification (Ramsey's RESET) test, the test for normality is based on a test of skewness and kurtosis of residuals and the test for a hetroskedasticity is based on the regression of the squared residuals on square fitted values.

Table (4.4 and 4.5) indicates that the long run ARDL model estimated in the study passes all the diagnostic tests. This is because the p-values associated with both the LM version and the F version of the statistic was unable to reject the null hypothesis specified for each test. The first test is answers the question is there an interdependence/correlation between two and more residuals. This is called an autocorrelation test. For both regressions, the null hypothesis of Brush God Fray LM test is fail to reject for the reason that the p-values associated with test statistics is greater than the 5% standard significance level (i.e. 0.254> 0.05) for remittance and economic growth and i.e. (0.36> 0.05) for remittance and economic growth .This implies that there is no problem of autocorrelation problem in the model. This LM test for serial correlation is applied since; it resolves the drawback associated with the traditional Durbin Watson test statistic i.e. it is not allowed to use DW test statistic as long as the lagged value of the dependent variable is incorporated as a repressors in the model.

Secondly the null hypothesis of Ramsey's RESET test, which tests whether the model suffers from omitted variable bias or not. It says the model is correctly specified. As the test result confirms we cannot reject it.

The third test is about the nature of distribution of the residual. The null hypothesis is suggested that the residual is normal distributed. Based on a test of skewness and kurtosis of residuals, we cannot reject the null hypothesis which says that the residuals are normally distributed. For the reason that, the p values associated with the Jaque-Berra normality test (0.99) and (0.764) are higher than 0.05 we accept that the error term is normally distributed for both regressions.

The last diagnostic test deals about the variance nature of the residual i.e. hetroskecedasitcity test. The null hypothesis is constant variance of the residual or homoskecedasitcity. As we observed from the above tables the p-value of the test statistic is higher than the associated significance level (i.e. 0.99 and 0.409 > 0.05), then we fail to reject the null hypothesis for both regressions.

4.2.4. **ARDL Long Run Model Estimation and Short Run Error Correction Model (ECM)**

4.2.4.1. **Remittance and Economic growth ARDL Long Run Model Estimation:**

The next important step, after assuring the existence of long run co-integration and stability of the model, is to the estimate the long run coefficients of the model. The following table presents the results found after running the appropriate ARDL model to find out the long run coefficients. The figures in bracket are number of lag chosen by the model for each variable.

ARDL (1, 0, 0, 1, 1, 0, 0, 1) selected based on Akaike information Criterion (AIC) Dependent variable is LRGDP

Table 4. 6 **Estimated Long Run Coefficients using the ARDL Approach**

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGCF	0.104773	0.076306	1.373062	0.1849
LENRT	1.804245***	0.422025	4.275211	0.0004
LRMW	0.665131***	0.159979	4.157601	0.0005
LLF	-0.263025	0.319192	-0.824035	0.4196
LODA	0.344545***	0.100066	3.443173	0.0026
LGEX	-0.037362	0.144782	-0.258056	0.7990
LFDI	0.215523***	0.057136	3.772110	0.0012
C	-0.553997	6.343286	0.087336	0.9313

Source: Model computation

N.B. *, ** and *** referrers statistical significance at 10%, 5% and 1% level of significance, respectively.

As we seen from table 4.6 above the estimated coefficients of Remittance, gross capital formation, human capital, government expenditure and Foreign direct investment produced the expected signs while in respect to labor force unexpected signs is produced, regarding the inconclusive Official development assistance effect discussed previously ended up with positive and highly statistically significant coefficient. In addition the estimated coefficients of Remittance, human capital, Official development assistance and foreign direct investment, are all statistically significance while gross capital formation, labor force and government expenditure are statistically insignificant irrespective of sign changes in some variables.

The estimated long run coefficient for remittance shows that remittance has positive and significant effect on economic growth during the study period. Other things being unchanged, a 1 percent increase in remittance income leads to an average of 0.66 percent boost in real GDP. What the finding suggests is that a significant portion of remittance inflows is directed to productive investments in the long run, and even the short run effect has a multiplier effect. In other words, remittance income is capable of inducing an increase in aggregate demand, leading to a rise in national output and subsequent increase in real income growth. This result is consistent with the finding of (R. Abdullaev 2011) for 10 selected Asian and south Caucasus countries found that remittance transfers have positive impact on per capita income growth in these countries .Fayissa and Nsiah (2008) for 37 African countries that remittances boost economic growth in countries where the financial systems are underdeveloped. Likewise, Giuliano and Ruiz-Arranz (2005) found a positive effect of remittances on growth, specifically for countries with lower financial development. Moreover, empirical studies by Qayyum et al (2008) in case of Pakistan, Jaweed and Ali Raza (2012) in case of Korea, Ikechi and Anayochukwu (2013) in case of Nigeria, Ghana and South Africa, and Ziesemer (2007) found similar positive results.

The Human capital (as proxied by expenditure on education and health) has statistically significant effect on economic growth. A 1% per cent increase in expenditure on education and health is associated with a 1.8% per cent increase in output. The findings of this research is concerning the long run positive effect of human capital on real GDP is consistent with the endogenous growth theories (mainly, advocated and/or developed by Lucas (1988), Romer (1992) which argue that the improvement in human capital (skilled and healthy workers) leads to productivity improvement that enhances output. The other studies like Driffield and Jones (2013), and Fayissa and Nsiah (2008) findings are in line with this finding.

The other important variable is official development assistant, as table 4.6 shows; ODA has a positive and significant effect on the real gross domestic capital. That is, holding other things constant, a one percent increase in the flow ODA lead to a 0.34 percent increase in real GDP. This finding is in line with Fentaye (2015) Ethiopia, 1974 to 2013, Tashrifov (2012) for 56 aid receiving countries and Asteriou (2009) for five South Asian countries. This is in a manner with

the argument on the importance of overseas capital flows for the economic growth of less developed countries.

Foreign direct investment is other variable which showed a significant positive impact to the Ethiopian economy in the long run for the period under consideration. As we observed from the above table model results other things remains constant as foreign direct investment increases by one percent real GDP has increased by 0.2 percent. An increase in FDI accelerate economic growth due to the influx of capital, employing labor, improve technology, increase market access, improve managerial skills of local firms and increased tax revenue for the host country The finding is in line with(Mohammed S.M. (2016) for MENA countries(Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia)from 1977 to 2014, Tahir et al., (2015) Pakistan, 1977 to 2013, Selamawit (2015) Ethiopia, 1980- 2015 and Nwaog & Ryan (2015) for 53 African countries, 1970 – 2009 reported FDI has a positive contribution to economic growth..

Finally the long run estimated model is presented as follows with figures in the parenthesis indicates the calculated t-value;

$$LRGDP = -0.5540 + 0.1048LGCF + 1.8042LENRT + 0.6651LRMW - 0.2630LLF +$$
$$\quad\quad (0.087) \quad\quad (1.373) \quad (4.275) \quad\quad\quad (4.157) \quad\quad\quad (-0.824)$$
$$0.3445*LODA - 0.0374LGEX + 0.2155*LFDI$$
$$(3.443) \quad\quad\quad (-0.258) \quad\quad\quad (3.772)$$

4.2.4.2.   Remittance and Economic growth Short Run Error Correction Model (ECM)

After the acceptance of long run coefficients of the growth equation the short run Error Correction Model (ECM) is estimated. ECM 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. Moreover it should have a negative sign and statistically significant at standard significant level. (I.e. p- value should less than 0.05).

Table 4.7 **Error correction representation for the selected ARDL model**

Dependant variable D(LRGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGCF)	0.049198	0.033148	1.484216	0.1533
D(LENRT)	0.847217***	0.055939	15.145269	0.0000
D(LRMW)	0.263560***	0.014929	-17.654426	0.0000
D(LLF)	0.121647	0.235573	0.516387	0.6112
D(LODA)	-0.161788***	0.029271	-5.527154	0.0000
D(LGEX)	0.017544	0.070933	0.247334	0.8072
D(LFDI)	-0.016914***	0.004135	-4.090196	0.0006
CointEq(-1)	-0.469569***	0.126291	-3.718152	0.0014

Cointeq = LRGDP - (-0.1048*LGCF + 1.8042*LENRT -0.6651*LRMW +
0.2630*LLF -0.3445*LODA + 0.0374*LGEX -0.2155*LFDI + 0.5540)

R-squared	0.998527
Adjusted R-squared	0.997717
F-statistic	1232.853
Prob(F-statistic)	0.000000

Source: Model computation

N.B. *, ** and *** referrers statistical significance at 10%, 5% and 1% level of significance, respectively.

The error correction coefficient, estimated at -0.46 is highly significant and has the correct negative sign. This shows that there is a very high speed of adjustment to equilibrium. The error correction coefficient (46 %), which is highly significant at 1% level, further confirms the existence of a stable long run relationship. The coefficient of the error term implies that the deviation from long run equilibrium level of real GDP in the current period is corrected by 46 % in the next period to bring back equilibrium when there is a shock to a steady state relationship. In other sense approximately 46 percent of the disequilibrium from the previous year's shock converges back to the long run equilibrium in the current year.

Unlike the long run model, in the short run remittance has significant but negative effect on output growth for the period under consideration. The negative effect of remittances on output is interesting that may be explained in terms of its use. Remittances are mainly used for consumption smoothing in the short run, as it is obvious that most of the remittance recipients' families are known by their very nature of consumption volatility. This result is similar to the

study by Qayyum *et al*., (2008) and, Waheed and Aleem (2008) both in the case of Pakistan as well as the study conducted by World Bank (2010b) in the case of remittance receivers in Ethiopia, where about 60% of remittance income received by households is meant for daily consumption.

Similar to the long run outcome, gross fixed capital formation and human capital are positively affected output, though the former is statistically insignificant while the later is statistically significant at 1% level of significant. Unlike the long run unexpected result, an increase in the labor force is associated with a positive effect on output. Even though it is highly statistically insignificant, in the short run a 1% increase in the labor force is associated with 0.12% increase in output level. In short run model Change in sign is also observed for the government consumption expenditure even if it is not statically significant. This might arise in short run government consumption expenditure could be used on consumption items which have a multiplier effect in boost aggregate demand and output

The other interesting result related to the short run model is associated with statically significant negative signs associated with FDI and ODA unlike their long run results. This may arise in the short run due to the crowd out effect from foreign direct investment on domestic investment. On the other hand this negative effect in the short run can be due to uneasy economic environment. Since a number of academic researchers shows the benefits of FDI and ODA depend on the economic environment of the host country, which cannot be made available in the short run for developing countries.

4.2.4.3. Remittance and Investment ARDL Long Run Model Estimation

In the same manner with the above analysis, after assuring the existence of long run co-integration and stability of the model, estimation of the long run coefficients of the model is undertaken. The following table presents the results found after running the appropriate ARDL model to find out the long run coefficients. The figures in bracket are number of lag chosen by the model for each variable.

Table 4. 8 **Estimated Long Run Coefficients using the ARDL Approach**

ARDL (1, 1, 2, 2, 2, 2, 2, 2) selected based on Akaike information Criterion (AIC) Dependent variable is LGCF.

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFDI	0.224324***	0.025350	8.849032	0.0000
LGEX	0.608661	0.422098	1.441991	0.1832
LRMW	0.597128***	0.093015	6.419675	0.0001
LNINT	-0.595139***	0.188589	-3.155745	0.0116
LNGDP	0.850825***	0.186936	4.551435	0.0014
LXM	-1.322051***	0.280659	-4.710529	0.0011
LDCT	1.909798***	0.325164	5.873344	0.0002
C	2.548942	1.476220	1.726667	0.1183

Source: Model Computation

N.B. *, ** and *** referrers statistical significance at 10%, 5% and 1% level of significance, respectively.

$$LGCF = 2.5489 + 0.2243*LFDI + 0.6087*LGEX + 0.5971LRMW - 0.5951LNINT -$$
$$(8.84) \quad (1.44) \quad (6.4) \quad (-3.15)$$

$$0.8508LNGDP - 1.3221LXM + 1.9098LDCT$$
$$(4.55) \quad (-4.71) \quad (5.87)$$

In this regression the dependent variable is log (GCF) and the coefficients of all independent variables- remittance, foreign direct investment, government expenditure, interest, Gross domestic capital, openness measured by the sum of import and export of the country and total domestic credit. The results indicate that remittance has high positive statistical significant effect on the gross capital formation. Other things being unchanged, a 1 percent increase in remittance income leads to an average of 0.59 percent boost investment on physical capital formation. This finding confirms the long run positive effect of remittance on economic growth finding in the previous regression and we can confirm the positive effect of remittance on economic growth is mainly achieved through its role as a potential capital for productive investment. The same positive contribution of remittance on economic growth through its effect on capital formation is reported by Abdullaev (2011) and Mohammed (2016). This finding can be further explained the 'self-interest' motives of sending remittance discussed in the literatures, by which remittances are aimed for investment or entrepreneurial purposes as well as personal consumption,

considering remittances as means of overcoming the lack of opportunities and a failing financial inclusion. Fayissa and Nsiah (2010) reported remittance has a positive and significant effect on growth where the financial systems are less developed by providing an alternative way to finance investment and helping overcome liquidity constraints. The long run effect can be related to the time it takes to entertain the fruit of any remittance aimed toward investment.

Foreign direct investment also has a positive statically significant effect on investment on physical capital formation. A 1 % increase in FDI is associated with a 0.22% increase on investment on physical capital formation. On the other hand as expected interest rate is negatively affected investment, a 1 % increase an interest rate caused a o.59% fall in investment. Other statically significant and large coefficient is exhibited on the effect of gross domestic product on physical capital formation: a 1% increase in gross domestic product is associated with a 0.89% increase in investment. An increase in total domestic credit is also related a significant increase on investment, a 10% increase in credit allows 19% increase on investment. An unexpected result from the long run model is the negative sign associated with openness which is both significant and large, in which a 10% increase on openness is associated with a 13% decline on investment. This may explained along with the study made on 30 developing sub-Saharan countries by Pigka-Balanika (2016) that shows the negative effect of openness to trade on economic growth, explained by higher natural barrier to trade, export dependency on primary commodities and poor overland infrastructure. Government expenditure has affected investment positively in the long run model but it is statically insignificant.

4.2.4.4. Remittance and Investment Short Run Error Correction Model (ECM)

As depicted in table 4.9, the error correction coefficient -1.18 is highly significant at 1% level. According to Narayan and Smyth (2006), if the value on the coefficient of the lagged error correction term is between -1 and -2, then the lagged error correction term produces dampened fluctuations on the dependent variable(i.e. investment on physical capital accumulation) about the equilibrium path). The lagged error correction term in the short-run model appears with a coefficient of -1.18, which implies that instead of monotonically converging to the equilibrium path directly, the error correction process fluctuates around the long-run value in a dampening manner. However, once this process is complete, convergence to the equilibrium path is rapid.

Table 4.9 **Error correction representation for the selected ARDL model**

Dependant variable D(LGCF)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LFDI)	-0.143344***	0.025555	-5.609270	0.0003
D(LGEX)	1.218364***	0.389509	3.127945	0.0122
D(LRMW)	-0.298298***	0.082854	-3.600283	0.0057
D(LNINT)	-0.653770	0.388688	-1.681991	0.1269
D(LNGDP)	0.919194**	0.401178	2.291240	0.0477
D(LXM)	1.000276***	0.267887	3.733943	0.0047
D(LDCT)	2.155383***	0.581070	3.709337	0.0048
CointEq(-1)	-1.182570***	0.213831	-5.530400	0.0004

Cointeq = LGCF - (-0.2243*LFDI -0.6087*LGEX -0.5971*LRMW + 0.5951
*LNINT -0.8508*LNGDP + 1.3221*LXM - 1.9098*LDCT -2.5489)

R-squared	0.997885
Adjusted R-squared	0.992950
Log likelihood	53.55433
F-statistic	202.1938
Prob(F-statistic)	0.000000

Source: model computation
N.B. *, ** and *** referrers statistical significance at 10%, 5% and 1% level of significance,
respectively

Unlike the long run model and most interestingly in similar manner with the previous analysis, in
the short run model remittance has negatively affected investment at 1% significant level for the
period under consideration. A 1% increase of remittance in the short run will result a 0.29% fall
in investment. This result further explained along with the same short run negative effect of
remittance on economic growth (i.e. a 1% increase in remittance lead to a 0.26% fall in
economic growth) in the previous analysis that has been related to consumptive use of remittance
rather than productive investment. The 'co-insurance' motives in which remittances are viewed
as potential sources of income to insure households against external shocks (part of a risk
spreading strategy) and 'altruism' motives, in which migrants remit because of emotional ties to
relatives in home countries can be further explain the consumptive behavior in some cases that
may inclined toward imported goods and the resultant negative effect of remittance on both
investment and economic growth in the short run.

The government expenditure in the short run model has positively affected investment. A 1% increase in government expenditure associated with a 1.2% increase on investment on physical formation. In a similar manner a 1% increase in gross domestic product, trade and total domestic credit results a 0.9%, 1% and 2.1% increase in investment respectively. Although it is statically insignificant, interest rate showed to affect investment negatively in the short run.

CHAPTER FIVE

5. CONCLUSION AND POLICY RECOMMENDATIONS

5.1. Conclusion

The main objective of this study is to assess the effects Remittance on economic growth and on investment in Ethiopia for the period ranging from ranging 19854/1985 to 2016/17. The study have investigated the long run and short run relationships between real GDP and other economic variables such as remittance, gross capital formation, human capital, Labor force, Official development assistant, foreign direct investment and Government expenditure in one hand; On the other between gross capital formation and remittance, foreign direct investment, Government expenditure, interest rate, Gross domestic product, openness to trade and total domestic credit using Autoregressive Distributed Lag (ARDL) bound test approach to co-integration and error correction. Before applying the ARDL model, all variables are tested for their time series properties (stationary properties) using ADF and PP tests. Both test showed the variables to be stationary at level or become stationary at their first difference and none of the variables were integrated at order two. This confirms the reason why the researcher uses ARDL model

In order to make the estimators efficient the model diagnostic tests are tested. The result shows that no evidence of serial correlation, no functional form problem (i.e. the model is correctly specified), the residuals is normally distributed and no evidence of hetroskecedacity problem. The presence of long run relationships, between real GDP, gross capital formation and their associated dependent variables used in the models, is tested by using bound test. The result revealed that F-calculated or F-statistics is greater than the upper bound critical value at standard

significance level. As a result we reject the null which says there is no long run relationship between the dependant and independent variables.

After checking all the necessary tests and accepting the results, next the researcher has estimated the long run ARDL model and short run error correction model. The results of the model for the first analysis, between economic growth and independent variables, have shown remittance, human capital, Official development assistance and foreign direct investment affected economic growth in the long run positively and significantly. Government expenditure and labor force has a negative and insignificant effect on economic growth in the long run. In the short run Remittance, official development assistance, foreign direct investment significantly affected economic growth significantly. However human capital effect found to be positive and significant while government expenditure and labor force has insignificant positive effect on economic growth. The short run error correction model (ECM) formulation reveals that there is convergence towards equilibrium in the long run and the adjustment is fairly strong and negative(-46%) per annum and statistically significant.

The results of the model for the second analysis, between Investment and independent variables, have shown remittance, foreign direct investment, gross domestic product and total domestic credit affected investment in the long run positively and significantly. Government expenditure has also positive but insignificant effect on investment in the long run. However interest rate and openness to trade has negative and significant effect on investment in the long run. In the short run remittance and foreign direct investment has a negative and significant effect on investment. Interest rate has also negative but insignificant effect on investment in the short run. on the other hand government expenditure, gross domestic product, openness to trade and total domestic credit has positive and significant effect on investment in the short run. The short run error correction coefficient, estimated at -1.18 is highly significant at 1% level interpreted following Narayan and Smyth (2006). The finding implies that instead of monotonically converging to the equilibrium path directly, the error correction process fluctuates around the long-run value in a dampening manner. However, once this process is complete, convergence to the equilibrium path is rapid.

5.2.   Recommendation

➢ Informal channel of sending remittance remain a prominent way for Ethiopians to send money home resulting mainly a loss of foreign exchange for the country's economy. This is due to lack of access to remittances services in the send and receive markets, high direct and indirect costs associated with formal channels, the existence of parallel market exchange rates, and regulatory barriers for undocumented migrants contribute to the high level of informal transfers.

   o Employ policies that increases access to formal remittance services in the send countries-such action may include increasing access to formal remittance to irregular migrants that don't have access for such service due to the absence of identification documents through negotiating agreements permitting the use of alternative identification documents to send money through formal channels

   o Employing policies aiming reducing cost of remittance-such as increasing competition among remittance service providers, encourage or even subsidize Ethiopian banks to open money transfer kiosks or branches in countries where there are large numbers of Ethiopian migrants,

   o Employing policies that allow a higher exchange rate for remittance senders or awards to frequent remittance senders.

   o Doing publicity works in way raises national feelings among the Diaspora informing the importance using formal channels on the improvement of the country's economy

   o Employing measures to avoid the parallel foreign exchange markets.

   o Doing publicity works in way raises national feelings among the Diaspora informing the importance using formal channels on the improvement of the country's economy.

   o Encourage Ethiopian banks to consider opening branches and/or money transfer businesses in countries where there are known to be large numbers of Ethiopians

- ➢ The Positive contribution of remittance can be further amplified by increasing its use as productive investment.
  - ○ For this purpose Policies should concentrate on improving the business environment and on creating attractive schemes to attract migrants to remit and also to invest on their home economy. Such measures may include;
    - ▪ Availing credit facilities to migrants to invest and acquire assets ,
    - ▪ Tax holidays and easing business doing such as license issuance process,
    - ▪ Easing investment regulation for Ethiopian origin migrants having host countries citizenship, and encourage and facilitate grouped Diasporas investments. This could improve the Diasporas' participation in trade, investment, and technology transfer.

- ➢ Financial inclusion through providing a higher banking access to the population and making baking technologies easily accessible (and user friendly for the less educated) allow remittance recipients to increase their saving habit that will in turn affect investment level positively. In addition providing wider banking access will reduce usage of informal and unofficial means of transferring, which highly hampers the country's ability to use from such transfers leading to the development of illegal foreign currency parallel market.

- ➢ Polices should concentrate on improving the safety and protecting the rights and dignity of migrants abroad to sustain transfers. And diplomatic works also should be made to bargain a higher wage for migrants in gulf countries.

- ➢ Future studies on remittance should be analyzed in relation to other important macro and micro economic variables beside economic growth in order to fully grab its effect.

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Appendices

Appendix.1. Results of Philips- Peron Test for Unit Root

Variables	PP t-statistic at level I(0)		PP t-statistic at first difference I(1)		Order of integration I(d)
	Intercept (C)	Intercept and trend (C&T)	Intercept (C)	Intercept and trend (C&T)	
LRGDP	2.778144	-0.229464	-3.845360***	-4.925532***	I(1)
LNGCF	2.097021	-0.736407	-5.673626***	-8.417369***	I(1)
LNENRT	2.227176	-1.719401	4.809227***	--5.625765***	I(1)
LNLF	0.878963	-2.120060	-5.495413***	-5.743665***	I(1)
LNRM	0.176202	-4.899049***	-6.799082***	-7.426914***	I(0)
LFDI	-1.525231	-3.882231**	-7.263060***	-7.263060***	I(1)
LNODA	0.2232527	-3.297917*	-7.843965***	-7.631622***	I(1)
LXM	0.671940	-2.340803	-4.676626**	-4.819740***	I(1)
LGEX	3.667312	-0.994237	-3.757873***	5.336950***	I(1)
LINT	-1.875576	-2.253962	-5.853226***	-5.752519***	I(1)
LDCT	4.242702	1.003448	-2.883446	-3.964325**	I(1)
LGDP	2.430900	-1.043394	-2.847914*	-3.622961**	I(1)

Source: Eviews 9.0 computation result

Appendix.2. Normality –Histogram test

    a.   Remittance and economic growth
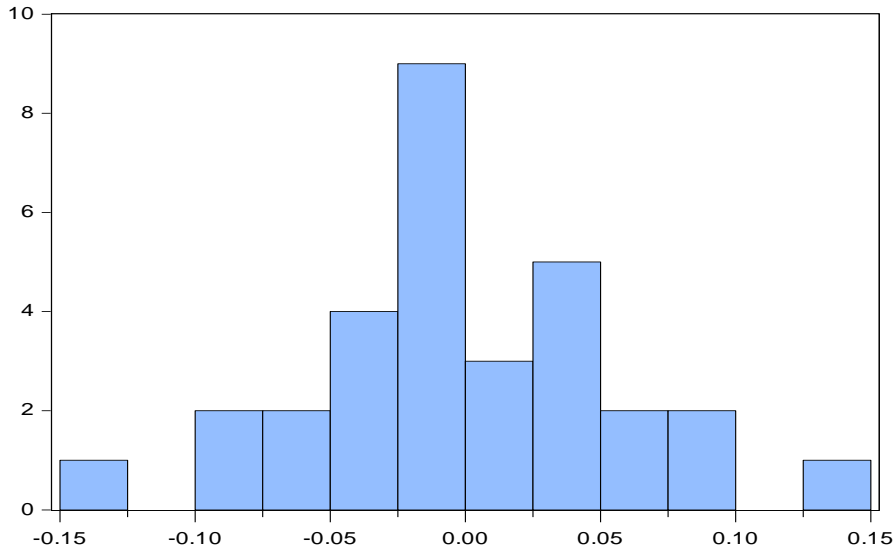
Series: Residuals	
Sample 3 33	
Observations 31	
Mean	-5.27e-15
Median	-0.002941
Maximum	0.143556
Minimum	-0.138844
Std. Dev.	0.057157
Skewness	0.167588
Kurtosis	3.551347
Jarque-Bera	0.537754
Probability	0.764237

Source: Eviews 9.0 computation result

    b.   Remittance and Investment
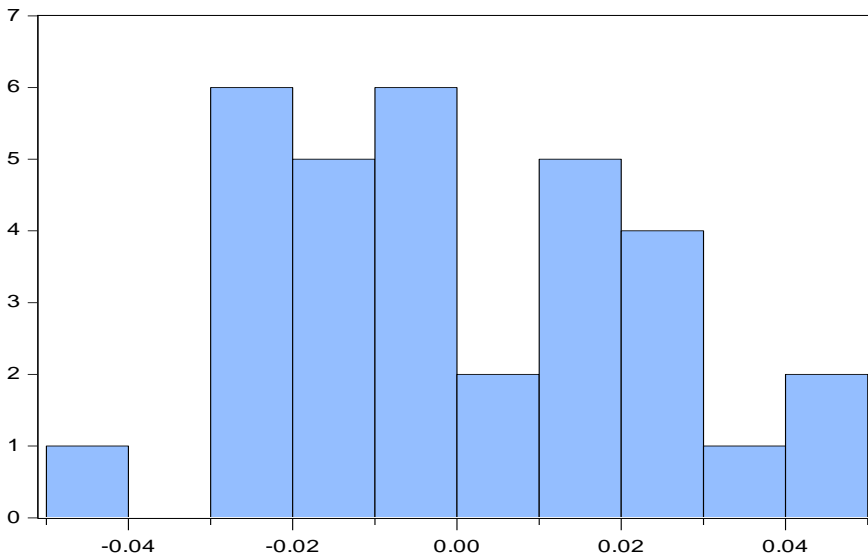
Series: Residuals	
Sample 2 33	
Observations 32	
Mean	-4.36e-15
Median	-0.001449
Maximum	0.049418
Minimum	-0.047208
Std. Dev.	0.023763
Skewness	0.223346
Kurtosis	2.261912
Jarque-Bera	0.992411
Probability	0.608836

Source: Eviews 9.0 computation result

Appendix .3. Data used for the Econometric regression all are measures in millions except for interest rate which is in percentile.

Year	RGDP	GCF	HC	LF	RM	FDI	ODA	GEX	X&M	DCT	GDP	INT
1984/85	101803	16067	512	21	29	0	1487	3823	2515	4478	15344	9
1985/86	111910	27052	566	21	28	1	1306	4062	3125	5081	15994	9
1986/87	126611	29350	602	22	18	5	1290	4003	2991	6063	16821	7
1987/88	125936	38448	654	23	23	4	1998	4821	3009	6406	17414	7
1988/89	126868	27202	670	24	13	1	1507	5726	2959	6835	18385	7
1989/90	132336	24516	650	20	11	25	2089	5283	2510	7972	19696	7
1990/91	128347	19684	717	21	20	12	2260	4854	2667	8930	22612	7
1991/92	125406	16754	948	22	31	0	2406	4205	2111	10106	24849	7
1992/93	139412	29027	1346	22	52	10	3033	5219	4551	11634	31639	15
1993/94	139480	31469	1563	23	142	99	6142	7094	6144	12789	33060	14
1994/95	147455	35958	1865	24	171	88	5482	8372	9284	14352	39672	15
1995/96	162373	40856	2031	25	101	139	5158	10194	10208	15411	44215	15
1996/97	169247	43065	2241	26	855	1875	3763	10015	12141	16446	48124	16
1997/98	167917	42821	2382	27	920	1794	4544	10899	13358	18523	52388	12
1998/99	178513	44834	2181	28	658	526	4832	14677	15139	20096	57188	12
1999/00	184881	44195	3166	29	958	1096	5600	17532	15194	26271	61273	12
2000/01	198595	50811	3112	30	1478	432	9191	15737	15693	27552	62030	13
2001/02	201840	57784	4307	31	1704	2178	11317	17650	17859	27550	60761	11
2002/03	197604	52050	5055	32	2004	122	13911	20496	20205	28202	67081	11
2003/04	220782	70593	6078	34	2874	10	15777	20504	27474	31139	77880	11
2004/05	248698	70719	7726	35	5042	1298	16690	24774	38765	40306	96391	11
2005/06	277396	83153	10761	36	6396	3169	17662	29325	48558	49296	119934	11
2006/07	310115	81346	13416	37	9283	4584	22923	35607	55584	61844	157170	11
,2007/08	344775	91086	16634	38	16525	7530	30656	46915	76791	79969	227704	12
,2008/09	379362	100693	21941	39	18780	9313	39845	57775	99895	89203	311043	12
,2009/10	419218	123118	29652	41	23801	12379	44540	71334	135072	104413	348686	12
,2010/11	475648	165380	37446	42	30839	20026	56346	93831	174219	135554	475648	12
,2011/12	517027	207608	45976	44	33632	18498	55958	124417	246082	189081	690445	12
,2012/13	568432	210908	56157	45	45300	22409	70696	153929	252995	233404	796303	12
,2013/14	626977	259173	73092	47	58254	27982	68363	185472	324080	299728	974727	12
,2014/15	692222	296901	89619	48	76271	44254	64983	230521	390655	393422	1192833	12
,2015/16	747360	585665	97378	50	93200	68989	85976	272930	412740	490230	1422602	13
,2016/17	829071	662837	127138	51	99397	93483	90188	329287	417957	631093	1676848	13