

UNIVERSITY OF EDUCATION, WINNEBA

**INVESTIGATING THE IMPACT OF INTERNATIONAL REMITTANCES ON
ECONOMIC GROWTH OF GHANA**




2017

UNIVERSITY OF EDUCATION, WINNEBA

**INVESTIGATING THE IMPACT OF INTERNATIONAL REMITTANCES ON
ECONOMIC GROWTH OF GHANA**

HANNAH QUANSAH

The logo of the University of Education, Winneba, is a circular emblem. It features a central torch with a flame, set against a background of a sunburst. Below the torch are three stylized human figures. The emblem is surrounded by a banner with the motto 'WISDOM BEGETS KNOWLEDGE'.

**A Dissertation in the Department of Accounting Education, Faculty of Business
Studies, submitted to the School of Graduate Studies, University of Education,
Winneba, in partial fulfilment of the requirements for award of the Master of
Business Administration (Accounting) degree**

AUGUST, 2017

DECLARATION

STUDENT'S DECLARATION

I, HANNAH QUANSAH , declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and acknowledged is entirely my own original work and it has not been submitted either in part or whole for another degree elsewhere.

SIGNATURE:

DATE:

SUPERVISOR'S DECLARATION

I, hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Education, Winneba - Kumasi

NAME OF SUPERVISOR: DR. HADRAT YUSIF

SIGNATURE:

DATE:



ACKNOWLEDGEMENTS

Firstly, I express my overwhelming earnest and appreciation to the almighty God, who under his vision, direction and protection this work has become a reality. I am also pleased to extend my gratitude and acknowledgement to my supervisor, Dr. Hadrat Yusuf who did an amazing job through relentless guidelines and unique encouragement all of which combined effectively to make this project a real success.

I am also grateful to Mr. Samuel Tawiah Baidoo who did marvelous work by editing my thesis for me. I also appreciate the library staff of University of Education, Winneba-Kumasi Campus for review of literature on the study. Special thanks go to Miss Vida Akuban Quansah, Mr. Emmanuel Anno-Kwakye and Rev Joseph Obiri Agyepong for the support, care and encouragement they gave me throughout the course. I am also indebted to Mr. Emmanuel K. Abrefa, Gabriel Mensah, Prince Amofa, Eric Boakye, Felix Nana Yaw, Vida B. Abigail and Obeng Amofa who contributed in diverse ways to make my schooling in University of Education, Winneba-Kumasi Campus enjoyable.

I am highly grateful to my entire family for making valuable sacrifices for my University of Education and also continue rally behind me to make my education a priceless one. Finally, I am grateful to my late grandparents Mr. Ben. O. Keelson and Zinabu Fowah and my father and mother Mr. Maxwell Akuban Quansah and Mrs. Sophia A. Keelson for their industrial, generosity and care which have constituted the foundation of my education, without them I would not have tasted education. God bless you all.

DEDICATION

This work is dedicated to the Almighty God for his divine protection and intervention and to my lovely parent Mr. Maxwell Akuban Quansah and Sophia Araba Keelson.



TABLE OF CONTENT

Content	Page
DECLARATION	iii
ACKNOWLEDGEMENTS.....	iv
DEDICATION	v
TABLE OF CONTENT	vi
LIST OF TABLES	ix
LIST OF FIGURE	x
LIST OF ABBREVIATIONS AND ACRONYMS	xi
ABSTRACT	xii
CHAPTER ONE: INTRODUCTION.....	1
1.1Background of the study	1
1.2 Statement of the problem	3
1.3 Objectives of the study.....	5
1.4 Research questions	5
1.5 Research hypothesis	5
1.6Significance of the study.....	6
1.7 Scope and limitation	7
1.8 Organization of the study	7
CHAPTER TWO: LITERATURE REVIEW.....	8
2.1 Introduction	8
2.2 The concept of remittance	8
2.3 The concept of International remittance	8

2.4 The concept of Economic growth	9
2.5 Trend of remittance	9
2.5.1 Trend of remittance in Ghana	11
2.6 Reasons for sending or receiving remittances	12
2.7 The cost of sending or receiving remittances	14
2.8 Methods used to send remittances.....	15
2.9 Uses of remittances	16
2.10 Impacts of remittance.....	18
2.10.1 Human capital and investment effect	18
2.10.2 Social effect.....	20
2.10.3 Remittance and Gender	21
2.11 Remittances and economic growth.....	22
2.11.1 Remittances and economic growth in Ghana.....	25
2.12 Macroeconomic determinants of remittances	27
2.13 The pessimistic impacts of remittance	27
2.14 Policy Measures to sustain remittance	28
2.15 Empirical review regarding the impact of remittances on economic growth	29
CHAPTER THREE: METHODOLOGY.....	32
3.1 Introduction	32
3.2 Model specification	32
3.3 Variable description, measurement and expected sign	33
3.4 Data source	37
3.5 Estimation Strategy	37

3.5.1 Stationary Tests.....	38
3.5.1.1 The Augmented Dickey Fuller unit root test.....	38
3.5.1.2 Philips-Perron (PP) unit root test.....	39
3.5.2 Co integration Technique	39
3.5.3 The ARDL Co integration Approach.....	40
3.5.4 Error of Correction Model.....	41
3.6 Diagnostic and Stability Test.....	41
CHAPTER FOUR: RESULTS AND DISCUSSION	43
4.1 Introduction	43
4.2 Trend analysis.....	43
4.3 Stationarity test results.....	44
4.4 Results from the co integration test.....	46
4.5 Long run estimated results	47
4.6 Short run estimated results	49
4.7 Diagnostic test results.....	51
CHAPTER FIVE: SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS	52
5.1 Introduction	52
5.2 Summary of major findings.....	52
5.3 Conclusion.....	53
5.4 Recommendations	53
REFERENCES	55
APPENDIX	62

LIST OF TABLES

TABLE	PAGE
2.1: Remittances (2006-2015).....	10
2.2: Foreign inward remittances (in US\$)	12
4.1 ADF unit root test results.....	45
4.2 Philips-Perron unit root test results	45
4.3 ARDL bounds test results for long run relationship	46
4.4 Estimated long-run results	47
4.5 Estimated short-run results	49
4.6 Diagnostic test results.....	51



LIST OF FIGURE

FIGURE	PAGE
4.1 Trends in Economic Growth and Remittance (1980-2015)	43

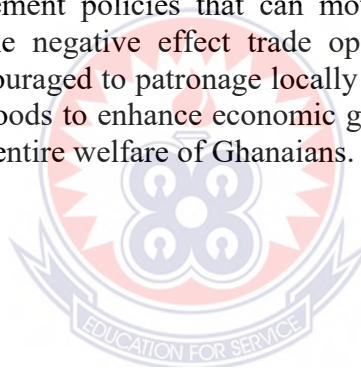


LIST OF ABBREVIATIONS AND ACRONYMS

BoG	- Bank of Ghana
BOP	- Balance of Payment
FDI	- Foreign Direct Investment
GDF	- Global Development Finance
GDP	- Gross Domestic Product
GLSS	- Ghana Living Standard Survey
GAMA	- Greater Accra
HTA	- Hometown Association
ILO	- International Labour Organization
IMF	- International Monetary Fund
IOM	- International Organization for Migration.
MTO	- Money Transfer Operator
MIC	- Multiple Indicator Survey
NBFI	- Non- Bank Financial Institution
NGO	- Non Governmental Organization
MPC	- Monetary Policy Committee
ODA	- Official Development Assistance
OECD	- Organization for Economic Cooperation and Development
OSCE	- Organization for Security and Cooperation in Europe.
UK	- United Kingdom
US	- United States
WB	- World Bank

ABSTRACT

In recent years remittances have gained attention among researchers, policy makers, members of the civil society and international community due to their increasing size. In this study, the main aim was to examine the impact of international remittances on economic growth of Ghana from 1980 to 2015. The study employed annual time series data and applied autoregressive distributed lag (ARDL) model as the estimation technique. The results show that remittance and economic growth over the study period showed an increasing trend. The short and long run results revealed that remittance has positive but insignificant influence on economic growth. The result further revealed that in the short run trade openness impact negatively on economic growth whereas government expenditure influenced economic growth positively. The long run result revealed that good governance, labour force and government expenditure significantly influence economic growth positively. Trade openness and financial development were revealed to have negative and significant influence on economic growth. Based on the positive relationship between remittance and economic growth, it is therefore recommended that policies regarding emigration should be structured properly to mobilize migrant capital to enhance economic growth. It is also recommended that government should implement policies that can motivate people to export more and import less to change the negative effect trade openness has on economic growth. Citizens must also be encouraged to patronage locally produced goods which will reduce the amount of imported goods to enhance economic growth. These are likely to enhance economic growth and the entire welfare of Ghanaians.



CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Beside savings and credit services, remittance services are among the most significant financial services for low-income people. Several people who receive remittance live in rural areas that have limited access to financial services including official and reliable remittance services. According to the United Nations report on international migration in 2015, the number of international migrants worldwide has repeatedly to rise rapidly over the past fifteen years reaching 244 million in 2015, up from 222 million in 2010 and 173 million in 2000. In 2015, two thirds (67 per cent) of all international migrants were living in just twenty countries. The largest number of international migrants (47 million) resided in the United States of America, equal to about a fifth (19 per cent) of the world's total. Germany and the Russian Federation hosted the second and third largest numbers of migrants worldwide (12 million each), followed by Saudi Arabia (10 million).

Also in 2014, migrants from developing countries sent home an estimated US \$436 billion in remittances; 4.4 percent increase over the 2013 level (World Bank 2015), far exceeding official development assistance and, excluding China, foreign direct investment. These monies are frequently used to advance the livelihoods of families and communities through investments in education, health, sanitation, housing and infrastructure. More so the researcher analyzed the 6th round of Ghana Living Standards Survey data on migration? It was indicated that 48.6 percent of the population is made up of migrants, with Accra (GAMA) having the highest proportion of migrants (60.3%).

Urban areas other than GAMA, has 46.7 percent of migrants. Over half (51.6%) of the population in rural forest are migrants. while in rural coastal, migrants constitute 44.6 percent of the population. Rural savannah (37.5%) has the least proportion of migrant population. Half of the female population (50.1%) is made up of migrants compared to 46.5 percent of males.

In 2005, according to the Bank of Ghana, Ghana's Central Bank, remittances sent through banks and finance companies totaled 4.76 billion US dollars, of this amount 1.39 billion dollars were private individual remittances. The remaining 3.37 billion dollars were sent to non-governmental organizations and religious bodies based in Ghana (Business and Financial times, March 2006).

The inflows of international remittances eventually outstripped the Official Development Assistance (ODA) and other capital flows as the main and most reliable source of foreign financial inflow for the country (Pfau 2008). Remittances therefore play great role both at individual and national levels. It is also reported that 10% increase in foreign remittance as a share of GDP is estimated to result in 3% decline in people living in poverty (Anyanwu and Erhijakpor, 2008).

The importance of remittance towards livelihood improvement of most people in the country has made most of the youth and professional to emigrate. Most Ghanaians benefit from money sent to them by family or relatives and friends living outside the country and these monies are used for daily consumption, payment of school fees, and building of houses. According to the Bank of Ghana, remittance inflows in 2009 and 2010 amounted

to US\$1.6 billion and US\$2.12 billion respectively representing about 6.2% and 6.6% of GDP respectively. The 2010 remittances were more than total ODA inflows of about US\$1.8 billion in the same year. There are three ways of measuring remittance flows in Ghana. The first is the balance of payments (BOP) estimates and the second approach is based on inferences from the Ghana Living Standards Survey (GLSS). The third approach focuses on transfers through banks or financial institutions in origin countries (Addison, 2005).

The role of migrant remittance in economic development keeps on to be an issue in recent years for policy makers, international organization, unilateral donors and researchers. The government of Ghana highlights much on improving the living standard of citizens. Over the years the government of Ghana has been focusing on various services and development projects to raise the living conditions of its citizens, in spite of these efforts, a range of factors including lack of finance have adversely affected the vision. The issue of finance has necessitated that her government falls on develop countries like Germany, Canada, Britain, and NGO's among others for assistance to develop the country. This research work will add to literature by investigating the impact of international remittances to economic development in Ghana.

1.2 Statement of the problem

Remittances continue to be a key source of external resource flows for developing countries, far exceeding official development assistance and more stable than private debt and portfolio equity flows (World Bank, 2016). According to Anyanwu (2011)

remittances-receiving countries in Africa need to develop a strategy to maximize the benefits of remittances while minimizing their negative repercussions. Ratha (2003) reported that remittances now surpass Official Development Assistance (ODA) in developing countries. Global Development Finance (2003) also indicated that remittances to developing countries are higher than the official aid flows and most other types of private capital flows. In Ghana remittances play significant role since most of the monies serve as capital for household's goods. This confirms Binci and Giannelli, (2012): Coaray, 2012): Meyer, (2016) who reported that remittances contribute to economic growth through their positive impact on saving or investment.

In Ghana remittances have increased rapidly from US\$201.9 million in 1990 to over US\$1,017.2 million in 2003 (Addison, 2004). Bank of Ghana records show that remittances have increased from US\$4.6 billion in 2005 to US\$4.9 billion in 2014. Adam, (2006); Quartey, (2006); Antwi 2017 argued that remittances improve the poverty status of receiving households by reducing the level, depth and severity of poverty in Ghana. Other studies have do investigated the effect of remittances on economic growth and development in Africa (Fayissa and Nsiah, 2010; John et al., 2014). Remittances are key to Ghana's economic growth and development especially with the building of one district one factory that government intends pursuing .Therefore further research is needed to perform in order to add to existing literature.

1.3 Objectives of the study

The main goal of the study is to investigate the impact of international remittances on economic development of Ghana. The study specifically seeks to;

1. Examine the trends of international remittance and economic growth in Ghana from 1980 to 2015.
2. Examine the effect on international remittance on economic growth in Ghana from 1980 to 2015.
3. Examine the effect of other macroeconomic variables such as inflation, trade, financial development, labour force, government expenditure and democracy on economic growth in Ghana from 1980 to 2015.

1.4 Research questions

This study will provide answers to the following questions.

1. What are the trends of international remittances and economic growth in Ghana?
2. What is the effect of international remittances on economic growth of Ghana?
3. What is the effect of macroeconomic variables such as inflation, trade, financial development, labour force, government expenditure and democracy on economic growth in Ghana?

1.5 Research hypothesis

In achieving the study objective, the following hypotheses were tested.

Hypothesis 1

H_0 : International remittances do not significantly affect economic growth in Ghana

H_1 : International remittances do significantly affect economic growth in Ghana

Hypothesis 2

H_0 : Macroeconomic variables such as inflation, trade, financial development, labour force, government expenditure and democracy do not have significant effect on economic growth in Ghana.

H_1 : Macroeconomic variables such as inflation, trade, financial development, labour force, government expenditure and democracy have significant effect on economic growth in Ghana.

1.6 Significance of the study

Remittances are also called private unrequited transfers from a very important portion of total foreign exchange in flows into country. It is established that remittances are so large, they come in foreign currency and they go directly to households thus these transfers have an important impact on poverty reduction, funding for housing and education, basic essentials needs and business investment. The study of the impact of international remittances on economic development in Ghana will bring to light the role remittances play in the economic development of Ghana, that is to say, how Ghana's economic changes with the receipts of remittances. Hence, it will help policy makers in making specific decisions on the flow of remittances into the country. The study will also add to the existing literature.

1.7 Scope and limitation

The scope of the study is limited on data collected from the World Bank's World Development Indicators (WDI, 2016) and Polity IV project. This study covers the period 1980 to 2015. This period was chosen due to availability of data.

1.8 Organization of the study

This study has been organized into five chapters. The first chapter centered on the background of the study, the statement of the problem, the objectives of the study, and research question and hypothesis and the significance of the study. The chapter two focuses on theoretical and empirical literature on the subject matter of the research. Chapter three of the study also underlines the method and estimations techniques the researcher employed in achieving the study objectives. Chapter four deals with analysis and interpretation of results and the discussions thereof. Chapter five presents the summary of the results, conclusions and recommendations as well as suggestions for further study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The research work is to highlight on the impact of international remittance to economic development in Ghana. The research work will discuss past research done on the topic and other related ones in order for the researcher to examine, analyze, explore, cite and summarize some of the related studies done. This will enable the researcher to set up theoretical framework for the problem and assist to confirm the important of the study.

2.2 The concept of remittance

International monetary fund (IMF) defines remittance as international transfers of funds sent by immigrant workers from the country where they are working to people in the country from which they came from. According to Daianu (2001), remittances are money migrants earn abroad that is sent back. They represent a private flow of capital from the country of employment to the country of original. Remittance can be sent within or between countries. This leads to further study of the concept of international.

2.3 The concept of International remittance

Ratha (2003, 2006) refers to international remittance as the sum of workers' remittances, compensation of employees and migrant's transfers in the balance of payment. In 2015, worldwide remittance flows are estimated to have exceeded \$601 billion. Of that amount, developing countries are estimated to receive about \$441 billion, nearly three times the amount of official development assistance. (World Bank 2016). According to the Ghana

living standard survey (GLSS6) The annual estimated total value of remittances received in the country amounted to GH¢1,804 million. Annual receipt of remittances by households which actually received them amounted to GH¢848.5 million. The estimated total annual value of remittances received by urban households (GH¢1,268.7 million) was about twice that which was received by rural households (GH¢535.2 million).

2.4 The concept of Economic growth

Economic growth is the increase in the inflation adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP, usually in per capita terms. According to Gadrey (2002) economic growth is the rate of increase, from one period to another, in the flows of goods produced and/or consumed within a given institutional space, which may be a firm, an industry, a national or regional territory.

2.5 Trend of remittance

According to Ghosh, (2006) remittance decay hypothesis is linked to common notion that young, married, low skilled and temporary male migrant remit the most and integrated, highly educated, well paid migrant invest more in host countries. The IMF (2001) reported that migrant remittances are increasingly becoming a constant source of income to most developing countries with a doubling of annual remittances between 1988 and 1999. Indeed with remittance inflow at \$175 billion per annum, international remittance to developing countries is now about twice the official development assistance (ODA) to developing countries (Adam, 2007).

Moreover the World Bank data below on Migration and Remittance Fact book 2016 show that the top 10 remittance recipients in 2015 (\$US billions): India (\$72.2bn), China (\$63.9bn), the Philippines (\$29.7bn), Mexico (\$25.7bn), France (\$24.6bn), Nigeria (\$20.8bn), the Arab Republic of Egypt (\$20.4bn), Pakistan i\$20.1bn), Germany (\$17.5bn), Bangladesh (\$15.8bn)

Again the top 10 remittance senders in 2014 (\$US billions): the United States (\$56.3bn), Saudi Arabia (\$36.9bn), the Russian Federation (\$32.6bn), Switzerland (\$24.7bn), Germany (\$20.8bn), the United Arab Emirates (\$19.3bn), Kuwait (\$18.1bn), France (\$13.8bn), Luxembourg (\$12.7bn), the United Kingdom (\$11.5bn). Also the top 10 remittance senders in 2014 (percentage of GDP): Luxembourg (19.6 percent), Liberia (18.2 percent), the Marshall Islands (12.8 percent), Oman (12.6 percent), Lebanon (12.3 percent), Kuwait (11.1 percent), Maldives (10.6 percent), Malta (10.6 percent), Bahrain (7.0 percent), and the Kyrgyz Republic (6.1 percent).

Table 2.1: Remittances (2006-2015)

US Dollars 2015f	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Inward remittance flows	56.2	71.3	84.3	79.3	95.1	107.3	107.4	114.7	122.9	129.0
All developing countries	228.6	279.5	324.8	302.9	335.7	377.9	400.7	416.2	431.1	-
World	330.3	398.6	460.2	429.4	463.7	525.9	547.0	572.3	592.9	-
Outward remittance flows	10.5	13.0	16.0	17.1	14.8	17.8	19.5	21.1	23.8	-
All developing countries	28.7	33.3	40.9	42.2	42.1	45.0	52.2	59.2	58.8	-
World	240.7	294.4	345.9	330.6	334.1	367.1	383.1	422.0	427.8	-

Source: Migration and Remittances Fact Book 2016, World Bank

Note: This table reports officially recorded remittances. The true size of remittances, including unrecorded flows through formal and informal channels, is believed to be larger. * For comparison: net FDI inflows US\$1,951.9 bn., net ODA received US\$150.09 bn. in 2013. Inward remittance flows were 0.8 percent of GNI, in 2013; outward remittance flows were 0.6 percent of GNI in 2013.

A Study on the characteristics of African remittances senders' base on micro data of more than 12000 African migrants in nine organizations for economic co-operations and development (OECD) countries (Bollard et al., 2010) complements the finding from survey of remittance – recipient's household. The destination country data suggest that Africa's remit twice as much on average as migrants from other developing countries. Furthermore the finding by Bollard, et al. (2010) pointed out that households that receive remittance, particularly from outside the African continent may be richer to begin with in order to have the resources needed for migration, but they may also have enough income because of migration and the receipt of remittance.

2.5.1 Trend of remittance in Ghana

In Ghana, the migration trend and its pull effect on remittances are not different. There are over five hundred thousand Ghanaians living in the UK and about one thousand Ghanaian doctors living and working in the USA. The main reason for the increased migration of professionals especially those in the health sector are low salary and remuneration, limited career prospects, concern about governance and management of the health system and concern about the poor retirement benefits and prospects. Studies by (Addison et al 2004) have however shown that there has been a corresponding increase in remittance volume to the country. Again large populations of Ghanaians live outside Ghana and their contribution to the Ghanaian economy and to individual households is increasingly significant. Mass emigration in the 1970s and 1980s has assisted to maintain a steady flow of migrants up to the present and created a large Diasporas that spans

Europe, North America and elsewhere. This has shaped remittance flows, the volumes of which are hard to evaluate correctly.

Table 2.2 shows the records of remittances from Bank of Ghana on 2005 to 2010. This is the nature and size of remittances that support the national economy.

Table 2.2: Foreign inward remittances (in US\$)

Year	Total	Individual	% of Ind. of Total
2005	4,629,621,611.83	1,262,467,069.24	27.27
2006	5,676,195,526.34	1,345,915,088.74	23.71
2007	6,769,068,011.09	1,655,786,219.08	24.46
2008	8,748,319,117.10	1,695,359,548.78	19.38
2009	9,491,380,343.66	1,576,625,285.70	16.61
2010	12,451,650,229.42	1,641,678,350.94	13.18
TOTAL	47,766,234,839.44	9,177,831,562.48	-
AVERAGE			19.21

Source: Bank of Ghana (2011)

2.6 Reasons for sending or receiving remittances

Remittances are currently one of the most tangible links that migrants living outside Ghana keep with their relatives in Ghana. The remittances sent by the migrant are used to care for the migrants interests, but may also contain some compensation for the agents (Chami et al., 2003). According to Agunias (2006) the motive for remitting money is altruism and self-interest to secure inheritances and to invest in home assets in the expectation of return. Also Orozco(2012) argue that sending of remittances based on family economics be it motivational by altruism or self-interest still heavily depend on family bonds that possibly weaken over time.

Many studies on remittance to Africa discovered that the higher the education migrants the lower the likelihood that they would remit (Lowell, 2001). The studies observed that highly educated migrants from Africa including Ghana appear more independent from their relatives back home than the less educated ones. Several Ghanaian migrant also send monies for the purpose of starting a business on return or for housing projects. This was habitually a joint project embark on with other family members. The less skilled migrant planning to return to Ghana were more likely use their remittance to finance a 'project' compared to privileged migrant that planned to return and in the midst of the elite, those for whom the decision to migrants was family influenced were more likely to invest in project back home.

The amount of remittances sent to Ghana by Ghanaians abroad is determined by factors such as personal and family situation back home, total earning, the amount saved, as well as the number of dependents at home. Other factors are economic activities in the host countries, exchange rates, political risk, marital status and the level of education of migration (Yaw, 2003). Remittance can also enable recipient household to build stronger and more resilient housing. Mohapatra, et al, (2009) found out that remittances receiving household in Burkina Faso and Ghana were more likely to have a concrete house, after controlling for the possible indignity of the remittance receiving status by using propensity score matching method.

2.7 The cost of sending or receiving remittances

The cost of sending money varies greatly from country to country among institution. According to Orozco (2003) the cost of transferring money from United States to other countries are relatively high and few foreign banks were found to be offering money transfer. For instance the cost of sending \$200 to Ghana is 7.50%. Also the department for international development (DFID) U.K has an active agenda to remove barriers to the flow of money transfers, lower their cost, and make access to money transfer products better for low income people. The World Bank's remittances price world wide database provides average remittances cost through bank and non-bank intermediaries for more than 150 migration corridors. The cost of remittances is the highest in Sub-Saharan Africa and in the Pacific Island countries (for example, it costs more than 20 percent to send \$200 from Australia to Vanuatu, and 19 percent from South Africa to Zambia). As of the third quarter of 2015, the average cost worldwide remained close to 8 percent far above the 3 percent target set in the Sustainable Development Goals.

Again IMF (2009) stated that 'Apart from explicit costs, hidden costs in foreign exchange transactions may significantly influence decisions regarding a particular channel. For instance, exchange rates offered may significantly change the final payout to the recipient and hence the attractiveness of a particular mode of transfer. In particular, under exchange control regimes, unofficial operators may offer a currency exchange rate that is more favorable than the official exchange rate, attracting senders to informal channels.

Ghana together with South Africa and Tanzania have been described as the most expensive sending countries in Africa, in terms of remittance prices, the World Bank's (WB) Send Money Africa database report (2017). The report said the high cost of the remittances was as a result of several factors including limited competition in the market for cross-border payments, adding that fees averaged 19.0 for Ghana, 20.7 for South Africa and 19.7 for Tanzania. It said Sub-Saharan Africa was the most expensive region to send money to, with average remittance costs reaching 12.4 per cent in 2012. The report added that the average cost of sending money to Africa was almost 12 per cent higher than the global average of 8.96 per cent, and almost double the cost of sending money to South Asia, which had the world's lowest prices (6.54 per cent).

2.8 Methods used to send remittances

The general remittance channels used is formal and informal transfer services. According to Sander (2003) the formal channels include service such as banks commonly electronic transfers between accounts, money transfer operators MTOs such as Western Union, Money Gram, Express fund, forex or currency bureaus and post office. The choice of mechanism to transfer remittances is influenced by several factors. These could include cost, speed and ease, limiting requirement, proximity and outreach, familiarity awareness and niche of services (Qorchi and Maimbo, 2003; Carling, 2005).

On the other hand the use of informal remittance system have the tendency to be most important in countries with relatively undeveloped banking sectors and where trade and exchange rate restriction encourage parallel markets and foreign exchange rate. Alem and

Soderbom (2012) documented that high inflation has negatively affected the welfare of the urban population and informal transfers have become an important coping mechanism. Macroeconomic policies in Ghana do not appear to encourage conditions for the informal unregulated or parallel transmission channel for remittance. The bank of Ghana sets the official exchange rate by averaging the exchange rates of the licensed banks which are liberalized and determine their own exchange rate. However inflation, fluctuations in the value of the cedi and general susceptibility to vagaries of the global market for a narrow range of export commodities lead to Ghana being characteristics by high level of economic uncertainty. This generates some of the conditions necessary for parallel and informal markets for remittance transfers and foreign exchange quite apart from the foreign exchange regulatory regiment. It is often presumed that remittances are sent informally because of the inefficiency of formal transfer methods as Sander and Maimbo (2003) put it “limits the potential of remittances to contribute to development”.

According to (IFAD 2009) a large share of remittances from outside Africa is channel through a few large international money transfer agencies which often works defacto de jure in exclusive partnership with African banks and post offices. Mobile money transfer services are now increasingly used for saving. The concept of mobile money transfers is being transferred from Africa to other developing region.

2.9 Uses of remittances

According to Alvi and Dendir (2009) households in urban areas in Ethiopia use transfers (including remittances, inter-household transfers, and gifts) as insurance against risks.

They show that about one-third of these households are involved in transfer activities and those gifts and transfers respond positively to measures of vulnerability such as unemployment and illness of household heads. According to Adams and Cuecuecha (2010) there are at least three distinct views: the most widespread one is that remittances are spent at the margin like income from any other source; a second view maintains that remittances tend to be spent on consumption rather than investment goods; finally, a more recent one claims that, since remittances are a transitory type of income, households tend to spend them at the margin more on investment goods — human and physical capital investments than on consumption.

A survey conducted by the Sussex Centre for Migration Research in Ghana, particularly in the Ashanti Region in March 2003 identifies three main uses to which remittances flows are applied which confirmed the findings of Caldwell, (1969). It found that remittances are used to satisfy individual needs, support social projects in migrants' originating communities and for investments. Again a paper by Bofo (2011) revealed that remittances are fund sent home to pay for education for loved one and for building or project for migrants preparing for their final return home. More so IEA (2003) confirmed that remittances flow to Ghana are currently use for investment purpose and are channeled into small- scale businesses or enterprise which promote self-employment and sole or partner's business formation among returning migrant and their relations back home.

2.10 Impacts of remittance

Studies have shown signal that the bulk of remittance is used for consumption as well as investment in human capital such as education, health and better nutrition within the recipient households (Sander 2003; Agunias, 2006). According to the World Bank book “International Migration Remittance and the Brain Drain (2005)”, remittances positive impact on development and welfare of migration developing countries. Durand and Massey (1992) argue that remittance use can faster growth rather than dependency and that border crossing need to leave a community addicted to migration.

2.10.1 Human capital and investment effect

The finding from a number of studies indicates that migrant remittance transfer improves education, health outcomes in recipient household and Yang,(2008) argued that remittance receiving household spent more on human capital accumulation (mainly child schooling, reduction in child labour and increase education expenditure)and entrepreneurship. For example, studies conducted in Burkina Faso (Hampshire, 2002; Wouterse, 2006) and Morocco (de Haas 2006) Suggest that international and internal migrations within the African continent should primarily be seen as a means to enhance livelihood security through income diversification because the welfare gains, if any, are relatively, small.

Remittance receiving households in Ghana invested more in education than did other households (Adams, Cyecyecha, 2008). According to Drabo and Ebeke (2010), remittances can contribute to better health outcomes by enabling household members to

purchase more food and health care services and perhaps by increasing information about health practices. Adam et al. (2008) used a nationally representative data from 2005/2006. Ghana household survey model of migration and remittance with 3,941 household to compare the marginal spending behavior of three groups of household, those receiving no remittance and those receiving remittances from Ghana and those receiving international remittances. The results show that using the average budget shares, household receiving internal remittances spend more on health and less on housing than household with no remittance and households receiving international remittance spend more on consumer goods/durables and education while they spend less on housing and food than households with no remittance households.

However remittances generate protection for those household that exist beyond the scope of the state and those who lack local wages work; it also sustain local investments which are largely overlooked by the international movement of capital. Migrant from time to time put in their remittance in a productive ways and investment would abandon in communities with access to urban centers and healthy agricultural land in some cases remittances encourage at least a modest level of investment. Cohen, Rodriquez (2005). Similar evidence by Jokish (2002) shows that in some instances remittances have generally not been dedicated to agricultural improvement and introduce overwhelmingly invested in housing and land. Lucas (2005) cites several case studies that show signs that remittance may indeed have acceleration investment in Morocco, Pakistan and India.

2.10.2 Social effect

Remittance brings much needed capital to sending households. These resources, both liquid and fixed are available at moments' notice and response to immediate needs, emergencies and plans for the future (Taylor et al, 1996). The two main forms of associational life are the Ghanaian churches and ethnic associations (Akyeampong, 2000). The association provides support to Ghanaians migrant and encourages solidarity. Migrants associations, often called hometown associations (HTAs) in the United States, organize migrants from various Latin American countries such as El-Salvador, Guatemala, Honduras, Mexico and the Dominican Republic. HTAs regularly send donations to finance investment for community projects and local development in the home countries (Ellerman, 2003).

Also in socio cultural respect the effects of migration and remittance were increasingly seen as detrimental. Exposure to the wealth of migrant was assumed to contribute to a change in rural tastes (Lipton 1980). Again the effect of remittance at the community level receives little attention from policy makers but they provide an infusion of cash into local commerce and they help develop financial infrastructure and financial intermediation. Akolongo (2004) observe that diasporas based groups are supporting districts assemblies in the relatively poor region of Brong-Ahafo. There are evidences that a Ghanaian diasporas and hometown association supports projects and communities in Ghana both materially and financially.

2.10.3 Remittance and Gender

Remittance affects gender relation of senders and receivers of remittance differently. The evidence provided by Chant and Redciffe (1992); Salih (2001) is that female's migration from "Patriarchal" society's forms part of household strategies such as family reunification and family formation. When women migrate alone, they are typically portrayed as passive victims of smuggle or traffickers, working under exploitations conditions. In service sector job or prostitution, thereby denying them the power of agency that men are stereotypically ascribed.

Feminist researcher in particular, have argued that this generalization mask household powers inequalities and rules out both individual decision making and the influence of non – house hold members (Rodenburg, 1997). Gender inequality is likely to affect migration and remittance access and use as well as have a significant impact on the inter family allocation of social and financial remittance, making it questionable whether migration and remittance automatically enable people to challenge established gender roles (Hein and Haas, 2009). Furthermore Wong (2006) findings show that Ghanaian women living in Canada remit to female member of the families primarily their mothers, in the absence of their mothers, they direct remittance to maternal siblings predominantly to sisters to help develop and strengthen their assets for their children to inherit.

2.11 Remittances and economic growth

The theoretical and experimental record on the remittance is far clear. Remittance can reduce poverty and fuel high rates of household, savings and investment. At the same time remittance boosts foreign exchange reserve and pushes the balance of payment in the territory, which contributes to improvement of credit rating and external debt sustainability. (Avendana, Gillard, Nieto-Parra, 2011; Ratha, Mohapatra & Silwa, 2010). Likewise Das and Serieux (2010) found that an increase in the rate of remittance trends to improve debt service payment to income rate.

Some researchers have also found that remittance can also generate an incentive that reduces the domestic work effort (Cham, Fullenkamp and Jahjah 2003). More, significant empirical evidence indicates that remittances lead to positive economic growth whether through increased consumption, savings or investment. Furthermore Dessai et al. (2003) indicated that additional consumption increase indirect tax receipts, thus also increasing government consumption or savings.

Addition to absolute indicators of growth and macroeconomics stability (Lucas 2005), remittance may have distributive effects on poverty and inequality. Remittances contribute to household income and thus in short run, reduce poverty. When it comes to the overall impact of remittances on income inequality, Anyanwu (2011) found evidence that remittance variable has a positive and statistically significant impact on income inequality in Africa. However his findings also show that, higher remittance would lead to higher income inequality in Africa and does not hold for all regions of the continent.

According to Anyanwu and Erhijakpor (2010) inequality –enhancing effect of remittance are small, the greater the reduction of poverty in the continent. For a small land-locked economy battered by a decade-long Maoist insurgency (1996–2006), prolonged political instability, slow growth rate and large exodus of youths for employment overseas, high inflow of remittances bears a huge significance both at micro and macro levels Vietnam experienced a sharp increase in economic growth rates and a dramatic drop in overall poverty (Glewwe et al., 2004), which yielded significant welfare gains for Vietnamese children (Edmonds and Turk, 2004). Yang (2008) finds that increased receipt of overseas remittances due to favorable exchange rate movements in the Philippines increases child schooling and educational expenditure, whilst reducing child labour. Binci and Giannelli (2012) also findings indicate that remittance increase schooling and reduce child labour.

A study conducted by Frank and Hammer (2002) using a nationally represented sample of Mexican households, found that the risks of low weight infant was reduced for pregnant women living in household that receives remittances from abroad. They argued that the economic remittances improve infant’s health by raising standards of living and by giving rise to technological and structural advancement in the community that leads to improve health outcomes. The economic impact of remittances has been considered beneficial at both the micro and macro levels at least in the short term and there is increasing evidence that remittances from abroad are crucial to the survival of communities in many developing countries (Blankson and Quartey, 2003)

Moreover remittance can increase country credit worthiness. According to Radha (2007), the ratio of debt to export of goods and services a key indebtedness indicator, would increase significantly remittance were excluded from the denominator. Remittance can reduce the probability of current account reversals, especially when they exceed 3 percent of G.D.P (Bugamelli and Paterno 2009). Taylor (1996) has also argued that remittances have multiplier effects that work to increase national income.

Again remittances also represent a very significant share of GDP in several low income countries thus the development effect of remittances depends on the 'life-cycle' of the whole migration process at the country level. In fact, for growing economies with rising per capita incomes, differentials across countries in the income per head will diminish, reducing the incentives for emigration. Remittances also served as a form of social insurance for migrants. A study by Taylor (1999) argues that remittances may serve as a form of insurance policy against risks. More so Stark (1991) argued that if remittances are seen as premium payments for future risks then it can be argued that they allow both parties to secure their livelihood in the event of external shocks, which may be in the form of loss of employment and drought occurring. Thus, remittances are counter-cyclical. Hulme et al. (2001) however suggest that for remittances to serve as a form of premium payment for future risks, these flows should enable households accumulate assets that reduce vulnerability to financial shocks and to gain access to entitlements such as education and health that contribute to livelihood security and sustainability.

2.11.1 Remittances and economic growth in Ghana

As is typical of developing countries, and also reflecting slow structural transformation over the past decades, the services sector (comprising mostly of non-tradable services) contributes the largest share of GDP, followed by agriculture, and industry. Despite raising the size of the economy by more than 65%, the recent rebasing of Ghana's national accounts did not change this structure. Other structural features of the economy include high dependence on a few commodities (gold, cocoa, and more recently oil) for export earnings, a still growing manufacturing sector, which contributes about 6.8% of GDP, and a labour market characterized by a significant gap between demand and supply leading to high levels of disguised unemployment and underemployment.

Also, Ghana is currently among the most promising economies in West Africa and in the continent, and has recently been growing faster than the average of these two groupings. After a slowdown of economic activity in 2009, the economy picked up in 2010 and grew in real terms by 7.7% and, in 2011, real GDP is estimated to have increased sharply by 13.7% (7.5% excluding oil) aided by oil revenues and strong export performance of cocoa and gold in volume and prices. Ghana is progressively coming a long way towards improving the management of its macro-economy, with inflation and the fiscal deficit gradually coming down. Despite these encouraging trends, there are still some obstacles to overcome. Thus, on the fiscal front, there is need to clear the expenditure arrears, and improve domestic resource mobilization efforts (the IMF projected the tax to non-oil GDP ratio at 16.7% in 2011).

The current account deficit, although improving, remains high. There is the need to strengthen the monetary policy transmission mechanisms, and to continue to ensure an appropriate level of the cedis subject to moderate risk of debt distress. Nevertheless, there is need to continue to guard against excessive debt accumulation, especially in a context where the public debt stock recently rose from 25.4% of GDP in 2006 to 36.9% in 2009 and an estimated 38.9% of GDP at the end of 2010, and the Government is contemplate management issues, and the authorities have also committed to using non-concessional resources to finance projects that can generate revenue to meet the debt service obligations. A World Bank assessment has concluded that some of the projects being considered under the MFA are sound and promise substantial returns, but also advised the Government of Ghana (GoG) to complete the feasibility studies for all projects. Ghana has experienced steadily increasing growth of over 7% per year on average since 2005. Following the attainment of middle income country status in 2010 and discovery of offshore oil reserves, per capital growth in the country has remained relatively high. Despite the growth recorded, inequality has been increasing in the country and poverty remains prevalent in many areas.

According to Monetary Policy Committee (2017), the recently released GDP data from the Ghana Statistical Service showed that growth outcome for 2016 was slightly weaker than expected, mainly due to a significant decline in industrial growth following the adverse effects of the energy crises and operational challenges in crude oil production for most part of the year. The overall GDP growth for 2016 turned in at 3.5 percent against an envisaged growth of 4.1 percent. However analysis by Castoldo et al. (2012) shows

that remittance has positive poverty reduction impact of Ghana and India. Also Adams (2006) stated that internal and international remittances reduce the level, depth and severity of poverty in Ghana. Litchfield and Waddington (2003) on Ghana also examined the welfare outcomes of migrants and non-migrants in Ghana using GLSS data and found that migrant households have statistically significantly higher living standards than non-migrants though there appears to have been a slight decline in the extent of migration over the decade.

2.12 Macroeconomic determinants of remittances

The existing literature has identified two basic sets factors that influence remittances. The first one is the “altruism” approach which is based on the economics of the family; remittances are driven by migrant workers’ concern for the income and consumption needs of family members left in the home country and the second factor is portfolio approach, in contrast, migrant workers earn income, and must then allocate their savings between home country and host country assets. Here, remittances are fundamentally driven by an investment motive. Many studies combine the two approaches in their empirical analysis. At a broad level, remittance flows are clearly tied closely to migration patterns.

2.13 The pessimistic impacts of remittance

From this perspective, south-north migrations was perceived as discouraging instead of encouraging the autonomous economic growth of migrant of migrant sending country (Durand et al 1996). As a natural growth of capitalist penetration migration is seen as

having mined traditional peasant societies by undermining their economies and uprooting their population. (Massey et al., 1913). Remittance from migrants have been found contribute to political destabilization and conflict perpetual by providing support for groups under war in the country of origin (Sorenson et al., 2001; Van, 2003) and in Ghana it is envisaged that some elections related effects will likely have Ghanaian emigrant sending more money back home to support local political campaigns a trend seen during pass election years Boah (2016). Which will negatively slow down the economic growth in the country? Also international remittances, as pointed out by Bridi (2005), do promote idleness on the part of the recipients. Chami et al. (2005) argued that migration and associated remittances may create a moral hazard problem, inducing disincentives to work among migrant household members. On the social side, Rodriguez (2000) had argued that remittances have, quite apart from increased family tensions within households but also increase migrants.

2.14 Policy Measures to sustain remittance

The common review of the literature specify that remittance have the capability to improve the livelihoods of receiving households and if well regulated and link to the Ghana's development agenda could lead to improvement. Countries receiving large remittance inflows may need to work out appropriate policies to deal with possible negative consequences. Countries can have a policy such as fiscal measures, sterilization of remittance inflow as a short term response, and longer term structural reforms to improve labour productivity and competitiveness of the economy. Countries can reduce it expenditure to prevent an over healing of the economy in the remittance (Adam, 2005).

Additionally a study by Shorten (2006) reported that remittances are highly persistent and partly explained by changes in income. The performance of the domestic banking sector and the access of the private sector to credit also to play an important role in attracting remittances.

Increasing the role of African post offices in remittances can be facilitated by several policy measures. African post offices can partner with destination – country post offices, banks and money transfer companies to extend existing domestic money order facilities to international remittances. Better coordination among the various regulating entities should be promoted to ensure better consumer protection. Other measures include inclusion of financial services in the definition of universal service of post offices; connecting post offices to high speed internet and creating integrated management information system; encouraging basic saving where remittance can be paid small saving deposited and payment processed; and integrating new technologies into their operation (Mohapatra and Ratha, 2006).

2.15 Empirical review regarding the impact of remittances on economic growth

Nyeadi et al. (2014) investigated the casual link between remittance and economic growth in three of the leading remittance recipients in West African countries including Nigeria, Senegal and Togo. The study used time series data from 1980-2012 and employed Granger-causality and co-integration tests under the vector Autoregressive Regressive (VAR) frame work. The study found unidirectional casual link in Nigeria and Senegal. It was also found that remittances lead to economic growth while economic

growth does not lead to remittances inflow and there is no casual link between remittances and economic growth in Togo.

Fayissa and Nsiah (2010) analyzed the impact of remittances on economic growth within the conventional neoclassical growth framework using panel data spanning from 1980 to 2004 for 36 African countries. The result of their findings is that remittances have positive impact on economic growth.

Karagoz (2009) also examined whether workers' remittances have growth impact on Turkish economy, by using data belong to 1970-2005 period. The times series regression findings show that remittance flow to Turkey have statistically meaningful but negative impact on growth. On the other hand, exports and domestic investments positively affect the economic growth, while foreign direct investment has no meaningful affect.

A study by Iqbal and Sattar (2010) provided an analytical answer to the important economic issue of whether workers' remittances contributed to economic growth in Pakistan during the period 1972-73 to 2002-03. The quantitative evidence shows that workers' remittances appeared to be an important source of economic growth. Other sources of growth were the public and private investment. Alternatively, there are a few factors like inflation rate, external debt, and deterioration in the terms of trade that affected country's economic growth adversely.

Driffied and Jones (2013) investigated the relative contributions of foreign direct investment, official development assistance and migrant remittances to economic growth

in developing countries. They used a systems methodology to account for the inherent endogeneities in these relationships. In addition, they also examined the importance of institutions, not only for growth directly, but for the interactions between institutions and the other sources of growth. They found that all sources of foreign capital have a positive and significant impact on growth when institutions are taken into account. In a related study, Barajas et al. (2009) examined whether workers' remittance promote to economic growth. They used the appropriate measurement and instrument that was both correlated with remittances. The results show that at best, workers' remittances have no economic growth.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the research method the researcher employed in analyzing the data. It also discusses the various strategies used to achieve the objective of the study. Specifically, model specification, variable description and source of data, unit root and co-integration analysis procedures were discussed.

3.2 Model specification

The main reason for this study is to assess the impact of international remittances on economic development to Ghana. Hence it require to specify an economic growth equation and incorporate into it remittance in order to find its impact on economic growth. However, apart from remittances there are other determinates of economic growth which are also captured in this study.

$$Y_t = f(INF_t, DEM_t, TR_t, REM_t, FD_t, LF_t, GEXP_t) \quad (3.1)$$

Where Y_t is the dependent variable and represents Economic Growth. With respect to the independent variables, INF_t , DEM_t , TR_t , REM_t , FD_t , LF_t , $GEXP_t$ represent inflation, democracy or good governance, trade openness, remittance, financial development, labour force and government expenditure respectively. The estimable form of equation (3.1) is given by equation (3.2).

$$Y_t = \beta_0 + \beta_1 \ln INF_t + \beta_2 DEM_t + \beta_3 \ln TR_t + \beta_4 \ln REM_t + \beta_5 \ln FD_t + \beta_6 \ln LF_t + \beta_7 \ln GEXP_t + e_t$$

$$(3.2)$$

where $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6,$ and β_7 are the coefficient of respective variables in the equation to be estimated and the variables are those explained in equation (3.1). This coefficient also measure the impact of each independent variable on the dependent variable (economic growth). The error term is represented by e_t and \ln represents natural logarithm. The study therefore estimates equation (3.2) to examine the effect of remittances and other macroeconomic variables on economic growth.

3.3 Variable description, measurement and expected sign

Dependent variable

Economic growth

Economic growth refers to the steady process by which the productive capacity of an economy is increased over time to bring about rising levels of national output and incomes. It indicates the increase in gross domestic product or other measure of aggregate income and is often measured as the rate of change in these measures. Real gross domestic product is used as a measure for economic growth for the purpose of this study following studies such as Michaely (1977), Afrentiou and Serletis (1991) and IEA (2006). Real gross domestic product data was sourced from World Development Indicators (2016) of the World Bank.

Independent variables

Remittances

In general term remittances refers to transfer of money by a foreign worker to an individual in his or her home country. Money sent home by migrants competes with

international aid as one of the largest financial inflows to developing countries. Workers' remittances are a significant part of international capital flows, especially with regard to labour in exporting countries. Remittances are expected to correlate positively with economic growth. This is because as these funds are received, it is expected that it will be either invested or consumed which will increase gross domestic and hence economic growth product of the economy. Data on remittance is obtained from World Bank's World Development Indicators (WDI, 2016).

Inflation

Inflation is the persistent increase in the general price levels of goods and services over a given period of time. It also indicates the continuous decrease in the value of the domestic currency. In this study the annual inflation rate is used as the measure. Inflation also measures the stability in the economy. Inflation is expected to correlate negatively with economic growth. This is because when inflation is high, it reduces the purchasing power of consumer and therefore goods and services produced cannot be purchased. If the goods and services produced are not purchased it will mean that producers cannot continue production and this reduce or halt production and hence a fall in gross domestic product and subsequently economic growth. Data on inflation is sourced from the World Bank's World Development Indicators (WDI, 2016).

Democracy/Good governance

All things being equal, it is expected that in an economy where there is enhanced democracy and good governance, the economy will be conducive for production and

other investment to take place. There a positive relationship between democracy or good governance and economic growth is expected. As there is much production and investment, the economy is expected to improve as well ceteris paribus. Polity score from the polity IV project has been used to measure good governance or democracy in this study. The value ranges from -10 (autocratic type of governance) to +10 (democracy type of governance).

Trade openness

Trade can simply be defined as the transactions (selling and buying) between two or more individuals or countries. In this study, trade has been measured as the sum of export and import of goods and services as a share of gross domestic product. It is expected that openness to trade will correlate positively to economic growth. This is because as an economy open up to trade, its market size increases and as a result much of its goods and services could be purchased, hence increase in gross domestic product. Data on trade is sourced from the World Bank's World Development Indicators (WDI, 2016).

Financial development

In this study, financial development is proxied by money supply. Money supply is defined as the liquidity instruments and every stock of currency that is circulating in a country's economy at a specified period. Money supply is the currency in circulation and demand deposit. Broad money supply to GDP ratio was used as a proxy to measure money supply. A rise in the money supply of an economy decreases the interest rate which generates more investment. An increase in investment further leads to a high

output in the economy which promotes economic growth. Positive relationship is therefore expected between money supply and economic growth. Data on money supply is obtained from World Development Indicators (2016) of the World Bank.

Labour force

Labour force refers to the portion of the population who are capable and able to work. In an economy where there is more labour force, the implication is that there will be more labour supply and this is likely to increase productivity and hence economic growth. This study used total labour force (people between the ages of 18 to 64 years) as a measure of labour force due to data availability and following Awokuse (2007). The coefficient of labour force is expected to be positive. This is because once firms have access to a cheap factor of production it will mean that more output will be produced at a cheaper cost and hence an improvement in economic growth. Data on labour force was obtained from the World Bank's World Development Indicator (2016).

Government expenditure

This is an aggregate transaction amount on a country's national income accounts representing government expenditure on goods and services that are used for the direct satisfaction of individual needs (individual consumption) or collective needs of members of the community (collective consumption). In this study, total amount of government spending as a percentage of gross domestic product is used as a measure for government expenditure as used by Rebelo (1993) and Levine et al. (2000). It is expected that

government expenditure will have a positive impact on economic growth following the national income identity which indicates that income or economic growth (Y) and government expenditure or consumption (G) have direct relationship. Again, an increase in government spending means government is spending more on goods and services produced in the economy *ceteris paribus*. As the demand for goods and services increases because of the increased in government spending, producers will increase their production and as a result there will be an increase in the total volume of goods and service and hence economic growth. Gross government expenditure data was sourced from World Development Indicators (2016) of the World Bank.

3.4 Data source

The study used secondary data for its analysis over time the period 1980-2015. All data with the exception of polity score (indicator for democracy or good governance) were sourced from World Bank's World Development Indicators (WDI, 2016). Polity score variable measuring democracy or good governance is sourced from polity IV project.

3.5 Estimation Strategy

Stationary tests, Unit Root and Co-integration test, the Augmented Dickey Fuller Co-integration and error of correction models are used to test whether the variables are consistent and reliable.

3.5.1 Stationary Tests

To test whether a given time series is stationary or not, we apply an indirect test for the existence of a unit root. The stationary or otherwise of a series can strongly influence its behavior and properties –e.g. persistent of shocks will be infinite for non-stationary series. Spurious regressions states if two variables are trending over time, a regression of one on the other could have a high R^2 even if the two are totally unrelated. If the variables in the regression model are stationary, then it can be proved that the standard assumption for asymptotic analysis will not be valid. In other words, the usual “ t -ratios” will not follow a t -distribution, so we cannot validly undertake hypothesis tests about the regression parameters.

3.5.1.1 The Augmented Dickey Fuller unit root test

This tests whether a time series variable is non-stationary using an autoregressive model. A well-known test that is valid in large samples is the augmented Dickey–Fuller test. The optimal finite sample tests for a unit root in autoregressive models were developed by Denis Sargan and Alok Bhargava. The early and pioneering work on testing for a unit root in time series was done by Dickey and Fuller (Dickey and Fuller 1979, Fuller 1976). The basic objective of the test is to test the null hypothesis that $\phi = 1$ and general formula is

$$\Delta y_t = \beta_1 Y_{t-1} + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} + e_t \quad (3.3)$$

where Δ is the difference operator, Y_t represents time series variable, β is the various estimated parameters of the difference values of the lagged variables, t is the time variable, α_1 is the parameter, and the e_t is the white noise error term.

3.5.1.2 Philips-Perron (PP) unit root test

Phillips and Peron's test statistics can be viewed as Dickey-Fuller statistics that have been made robust to serial correlation by using the Newey-West (1987) heteroskedasticity and autocorrelation-consistent covariance matrix estimator. Phillips-Perron tests assess the null hypothesis of a unit root in a univariate time series y . All tests use the model:

$$y_t = c + \delta t + \alpha y_{t-1} + e(t). \quad (3.4)$$

The null hypothesis restricts $\alpha = 1$. Variants of the test, appropriate for series with different growth characteristics, restrict the drift and deterministic trend coefficients, c and δ , respectively, to be 0. The tests use modified Dickey-Fuller statistics to account for serial correlations in the innovations process $e(t)$.

3.5.2 Co integration Technique

Many time series are non-stationary but "move together" over time. If variables are co integrated, it means that a linear combination of them will be stationary. A co integrating relationship may be seen as a long term relationship. However, use of variables in their differenced form removes (long run) information from data, resulting in a model that can only provide short run information on the relationship between variables. To avoid such

problems, one must test to determine whether a long run relationship exist between the variables in the model.

3.5.3 The ARDL Co integration Approach

The ARDL Co-integration is a technique introduced by Pesaran and Shin(1996);Pesaran and Smith (1998) and Pesaran et al. the technique has a number of advantages over Johansen Co- integration technique which is used to determine the long term relationships between variables of interest , it has remain the techniques for many researcher for a long time . They have argued that technique is the most accurate method to apply for I (1) variables. However the ARDL model is the statistical important approach to determine the co-integration relation in small samples (Ghatak and Siddiki 2001), it can also be applied whether the repressors are I (1) and or (0). This means that the ARDL approach avoids the pre-testing problems associated with standard cointegration which requires that the variables be ready classified into I (1) or I (0) (Pesaran et al., 2001).

Remittances Model

$$\begin{aligned}
 \Delta \ln Y_t = & \beta_0 + \ln Y_{t-1} + \gamma_1 \ln INF_{t-1} + \gamma_2 \ln DEM_{t-1} + \gamma_3 \ln TR_{t-1} + \gamma_4 \ln REM_{t-1} + \gamma_5 \ln FD_{t-1} + \gamma_6 \ln LF_{t-1} \\
 & + \gamma_7 \ln GEXP_{t-1} + \sum_{i=0}^p \beta_1 \Delta \ln Y_{t-1} + \sum_{i=0}^p \partial_1 \Delta \ln INF_{t-1} + \sum_{i=0}^p \vartheta_1 \Delta \ln DEM_{t-1} \\
 & + \sum_{i=0}^p \mu_i \Delta \ln TR_{t-i} + \sum_{i=0}^p \sigma_i \Delta \ln REM_{t-i} + \sum_{i=0}^p \varphi_i \Delta \ln FD_{t-i} + \sum_{i=0}^p \phi_i \Delta \ln LF_{t-i} \\
 & + \sum_{i=0}^p \tau_i \Delta \ln GEXP_{t-i} + \mu_t \quad (3.5)
 \end{aligned}$$

3.5.4 Error of Correction Model

It is commonly used for data where the underlying variables have a long-run stochastic trend. ECM is a theoretically-driven approach useful for estimating short-term effects of one time series on another. The term error-correction relates to the fact that last-periods deviation from a long-run equilibrium, the error, influences its short-run dynamics. Thus ECM directly estimates the speed at which a dependent variable returns to equilibrium after a shock in any of the independent variables. Yule (1936) and Granger and Newbold (1974) were the first to draw attention to the problem of spurious correlation and find solutions on how to address it in time series analysis.

3.6 Diagnostic and Stability Test

To confirm that the model used in this study is free from any econometric problem, normality test, serial correlation test, heteroskedasticity test, functional form and stability tests were conducted. Serial correlation and heteroskedasticity tests were conducted using Breusch-Godfrey LM-test and Breusch-Pagan-Godfrey tests respectively. In these tests, the null hypothesis of no serial correlation and heteroskedasticity were tested against the alternative hypothesis of serial correlation and heteroskedasticity. The null hypothesis is not rejected if the probability values are less than 0.05 which indicates the absence of serial correlation and heteroskedasticity in the model. On the other hand if the probability values are greater than 0.05, the null hypothesis is rejected and this will indicate the presence of serial correlation and heteroskedasticity in the model. Again, normality test and functional form test which determines whether the series are normally distributed and the model is correctly specified respectively were also conducted. In these tests the null

hypothesis of normal distribution and model correctly specified were tested against the alternative hypothesis of not normally distributed and model not correctly specified. Normality and the model specification test were conducted using Jarque-Bera and Ramsey Reset tests respectively.



CHAPTER FOUR

RESULTS AND DISCUSSION

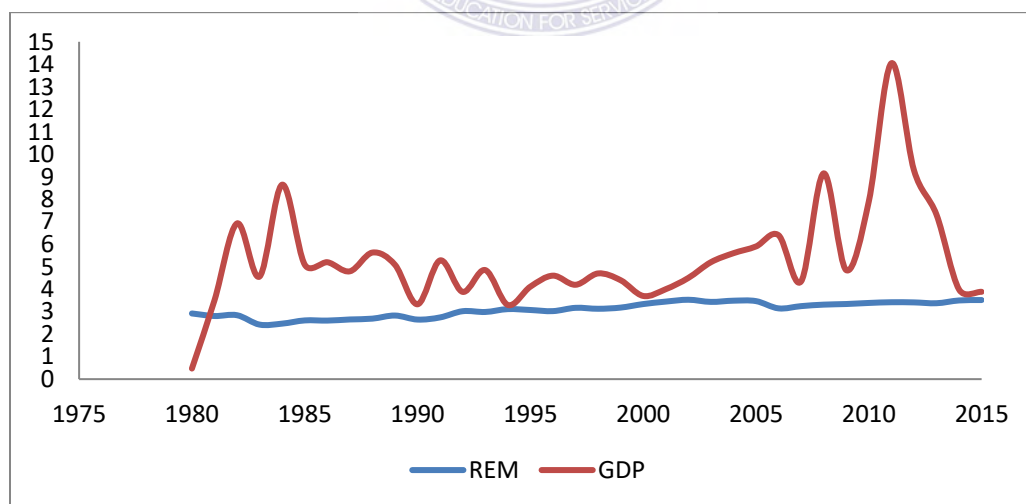
4.1 Introduction

This chapter presents the results from the study and the discussion thereof. The chapter is divided into five sections. The first section presents the trend analysis of economic growth and remittance from 1980 to 2015. The second section presents the results from the unit root test as well as the cointegration test result. The third section focuses on the long run results whereas the fourth section presents the short run results. The final section presents the results from the diagnostic test.

4.2 Trend analysis

The trends analysis in international remittance and economic growth from the period 1980 to 2015 are analyzed and the result is shown in Figure 4.1.

Figure 4.1 Trends in Economic Growth and Remittance (1980-2015)



Source: Authors

From Figure 4.1, it is revealed that by the early 1980's the economy of Ghana was not good enough for growth. For example the average GDP growth was 0.9 percent for the

period between 1975 and 1983. Most of the sectors of the economy were not performing as they were supposed to do. They were producing below capacity which reached as low as 4.9 percent with an inflation rate of 122.9 percent. This decline state of the economy was due to some external and domestic shocks such as the oil crises which was encountered by the international community, which negatively affected the world's economy. For Ghana's economy, the deteriorating state could be credited to the severe drought, the excess lending and inflation and low productivity capacity of the industries.

After 1983, the economic growth of Ghana started increasing. For instance between 1983 and 2000 the growth averaged 9.0. More so between 2000 and 2010 the growth was averaged 11.02. This improvement in GDP per capital could be attributed to the acceptance of the stringent international monetary fund (IMF), World Bank loan conditions and institution the economic Recovery Program (ERP). The ERP fundamentally change the government's social, political and economic orientation. The introduction of the ERP was to help Ghana to repay its foreign debt. Additionally the trend in economic growth of Ghana continue to show positive strength until 2011 to 2015 when it started to decline and this could be accredited to the power crises the country face thus lead to low productivity. On the other hand international remittances showed an upward trend with the exception of 1983, where the country went through many challenges like the famine and drought coupled with macroeconomic instability.

4.3 Stationarity test results

In order to ascertain the stationarity properties of the series ADF and PP tests were conducted and the results are reported in Tables 4.1 and 4.2 respectively. It is observed

that some of the variable are stationary at first difference $I(0)$ and whiles other variable are non-stationary at the levels $I(1)$.

Table 4.1 ADF unit root test results

Variable	Level		First Difference		Order of integration
	Trend	No Trend	Trend	No Trend	
LnY	1.248516	-1.033722	-4.603911***	-4.926041***	$I(1)$
LnINF	-3.700711***	-5.256716***	-6.052968***	-5.898866***	$I(0)$
DEM	-0.550208	-1.755284	-5.411089***	-4.427548***	$I(1)$
LnTR	-1.398902	-1.500792	-4.806484***	-7.628361***	$I(1)$
LnREM	-0.920513	-3.095313	-6.655579***	-6.566834***	$I(1)$
LnFD	-1.138611	-2.539797	-6.455987***	-3.350637**	$I(1)$
LnLF	0.243464	-10.27082***	-10.50251***	-9.958867***	$I(0)$
LnGEXP	-0.723233	-2.382682	-3.920307***	-3.804233***	$I(1)$

Source: Authors

Note: *** and ** denote the rejection of the null hypothesis at 1 percent and 5 percent respectively

Table 4.2 Philips-Perron unit root test results

Variable	Level		First Difference		Order of integration
	Trend	No Trend	Trend	No Trend	
LnY	1.091665	-1.033722	-4.593684***	-4.892806***	$I(1)$
LnINF	-3.606313***	-5.326267***	-16.23125***	-23.92519***	$I(0)$
DEM	-0.567443	-1.887524	-5.408609***	-5.333800***	$I(1)$
LnTR	-1.394816	-1.721709	-4.813469***	-5.032680***	$I(1)$
LnREM	-0.783608	-3.147459	-6.664100***	-6.566834***	$I(1)$
LnFD	-1.106667	-2.668501	-6.459447***	-6.345202***	$I(1)$
LnLF	0.218514	-1.991073	-5.255569***	-5.192547***	$I(1)$
LnGEXP	0.136731	-2.169561	-3.699788***	-3.452024*	$I(1)$

Source: Authors

Note: *** and * denote the rejection of the null hypothesis at 1 percent and 10 percent respectively

To have consistent and variable result, devoid of any spurious outcomes. It is important to work with stationary result. Based on the result that was captured the null hypothesis

rejected inflation which was stationary at first difference whiles economic growth, democracy, trade openness, remittances, financial development, labour force and government expenditure was accepted.

It is clear that the results from both tests are not significantly different. That is both ADF and PP tests gave similar result. This therefore supports the use of the ARDL model in this study. Hence, the study continued with the bounds test to establish or otherwise the presence of long run relationship between the variables used in the model.

4.4 Results from the co integration test

The results from the bounds test are conducted and the results are reported in Table 4.3.

Table 4.3 ARDL bounds test results for long run relationship

Test Statistic	Lower bound critical value	Upper bound critical value
3.827963**	2.32	3.50

Source: Authors

Note: **denotes the rejection of the null hypothesis of no co integration at 5 percent level of significance.

The result reveals that the F-statistic of 3.827963 is greater than the upper bound critical bound value of 3.50 indicating the rejection of the null hypothesis of no long run relationship between the variables at 5 percent significance level. This therefore supports the estimation if the long-and short run results using the ARDL approach.

4.5 Long run estimated results

Following the confirmation of the long run relationship between the variables the study further estimated the long run results and the outcome is reported in Table 4.4.

Table 4.4 Estimated long-run results

Regressor	Coefficient	Standard Error	T-Statistic	Prob. value
LnINF	0.022177	0.060556	0.366218	0.7201
DEM	0.046891	0.017692	2.650337	0.0200
LnTR	-0.177700	0.062081	-2.862408	0.0133
LnREM	2.756828	1.559722	1.767512	0.1006
LnFD	-2.592702	0.576004	-4.501188	0.0006
LnLF	2.398091	0.405622	5.912127	0.0001
LnGEXP	0.517190	0.052421	9.866099	0.0000
Constant	-2.491185	2.274172	-1.095425	0.2932

Source: Authors

Note: LnY is the dependent variable.

The results revealed that there is a positive relationship between remittance and economic growth. Though the result is consistent with the a priori expectation it is however not significant. Specifically one percent increase (decrease) in remittances will result in 2.76 percent increases (decrease) in economic growth. This insignificant relationship could be attributed to the fact that the size of the remittances that comes to the country are not enough and the way they are spend do not contribute to economic growth .

The study revealed that there is a positive relationship between inflation and economic growth and statistically insignificantly. This means that one percent increase (decrease) inflation will result in 0.221 percent increase (decrease) economic growth. When

inflation is high, it lowers the purchasing power of consumer and therefore goods and services produced cannot be purchased. This kills the production industries in a country.

More so there is positive relationship between democracy and economic growth and the result is consistent with the priori expectation and it is also significant. Specifically 1 percent increase (decrease) in democracy will result in 2.757 percent decrease in economic growth. An economic with good governance would yield a good.

Again there is negative and significant relationship between trade and economic growth. It shows that 1 percent increase (decrease) in trade will result in 0.178 percent decrease in economic growth. This can be accredited to the number of import of goods and services that comes to this country. We intend to import more than we export. Also it was found that there is negative and significant relationship between financial development and economic growth. An increase (decrease) in financial development will result in 2.757 percent decrease economic growth. It can be said that the citizen are not able to take loans from the financial institution due to the high interest rate they are supposed to pay and it is hardly for them to invest.

Labour force was found to have positive and significant effect on economic growth. Increasing labour by 1% will cause economic growth to increase significantly by 0.636 significant. This indicates that increasing the labour force has the potential to provide cheap and easy access to labour in the production process. This will also mean the Ghanaian economy will make use of labour that has in abundant in production and thus

increasing output. This confirms the findings of Fosu (1992) and Awokuse (2007). Furthermore there is positive and significant relationship between labour force and economic growth which means that 1 percent increase (decrease) in Labour will result in 2.40 percent increase (decrease) in economic growth. Lastly, the study reveals positive and significant relationship between government expenditure economic growths has revealed in the long run.

4.6 Short run estimated results

To examine the short run dynamics of the variables used, the study further estimated the short run results and the outcome is reported in Table 4.5

Table 4.5 Estimated short-run results

Regressor	Coefficient	Standard Error	T-Statistic	Prob. value
$\Delta \text{LnGDP}(-1)$	-0.218275	0.123642	-1.765372	0.1010
ΔLnINF	-0.001875	0.037835	-0.049559	0.9612
$\Delta \text{LnINF}(-1)$	0.044940	0.032518	1.382003	0.1903
ΔDEM	0.011420	0.012314	0.927443	0.3706
ΔLnTR	-0.260135	0.103077	-2.523682	0.0254
$\Delta \text{LnTR}(-1)$	-0.286994	0.109405	-2.623227	0.0211
ΔLnREM	0.151068	1.231952	0.122625	0.9043
ΔLnMS	-0.797324	0.425597	-1.873425	0.0837
$\Delta \text{LnMS}(-1)$	0.324718	0.195102	1.664347	0.1199
ΔLnLF	0.639713	0.913895	0.699986	0.4963
$\Delta \text{LnLF}(-1)$	-1.692621	0.849930	-1.991483	0.0679
ΔLnGEXP	0.579797	0.073772	7.859306	0.0000
$\text{ecm}(-1)$	-0.820312	0.202327	-4.054381	0.0014
R^2	0.998339			
Adjusted R^2	0.995785			
Durbin Wastin	2.690952			
F-statistic	390.7686			
Prob(F-statistic)	0.000000			

Source: Authors

Note: LnY is the dependent variable.

The coefficient of remittance is also appropriately signed thus an increase (decrease in remittance directly affect economic growth. The study shows that remittance have positive relationship (0.1511) with economic growth though insignificant. The estimated result also shows that inflation has insignificant and negative effect on economic growth. The negative effect suggests that as price increase there is the tendency for demand as well as consumption to fall thus causing economic growth to decline.

Again the estimated coefficient of Trade is negative (-0.0188) and statistically significant. This result may be attributed to trade liberation over the period that has worsened the income and distribution. The study reveals that labour force has positive (0.63971) and statistically insignificant. The result indicates that democracy and good governance statistically insignificant. This shows that 1 percent increase in democracy leads to about 0.011 percent. This confirms the argument made by the La Porta et al (1997) and Fayissa et al. (2010).

Moreso Government expenditure has positive influence on economic growth though is insignificant. It shows that 1 percent increase in Government expenditure will cause output growth by 0.586 percent. Hence increasing Government will consequently increase two amount of money in the domestic economy which may also increase aggregated demand and subsequently increase aggregate output as confirm by IEA (2006).

4.7 Diagnostic test results

To determine the reliability of the results obtained as well as ensuring that the results are not spurious various diagnostic tests were conducted and the results are reported in Table 4.6.

Table 4.6 Diagnostic test results

Diagnostic test	Test Statistic	Prob. value
Normality	0.349635	0.8396
Serial Correlation	3.602151	0.0820
Heteroskedasticity	0.346439	0.9838
Functional form	0.154927	0.7008
CUSUM	Stable	
CUSUMQ	Stable	

Source: Authors

The results show that the empirical model estimated is free from any econometric problem since the probability are all greater than 0.05. In all the test conducted; normality, serial correlation, heteroskedasticity and functional form, the null hypothesis of absence of these issues could not be rejected implying that the model estimated is free from any of these problems. Regarding the stability of the model, the plots of cumulative sum (CUSUM) and cumulative sum of square (CUSUMSQ) indicated that the model is stable. This is because the plot of the residuals (blue line) lies between the lower and the upper bound critical lines (red lines). Hence, it is concluded that the results obtained are reliable which is also confirmed by the negative and significant error correction term (ecm).

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The main goal of this study was to investigate the impact of international remittances on economic development of Ghana. This chapter presents the summary of the study, conclusion and recommendation from the study.

5.2 Summary of major findings

The study examined the effect of remittance on economic growth using annual time series data from 1980 to 2015. The study revealed that economic growth showed upward trend with the exception of 1983 and 2011 to 2015 which could be attributed the severe drought and the power crises that Ghana went through respectively. On the other hand, international remittance showed upward trend over the period of study.

The short and long run results from the ARDL revealed that international remittance and economic growth have positive but insignificant relationship. This demonstrates that remittance does not influence economic growth considering the period under study. The study also indicates that democracy or good governance has positive and significant relationship on economic growth. This indicates that good governance has the potential in influencing economic growth positively. Furthermore, labour force and government expenditure have positive and significant effect on economic growth. Positive and significant relationship between trade openness and economic growth has been revealed

by the study. However, the study revealed insignificant relationship between inflation, financial development and economic growth.

5.3 Conclusion

The study used annual time series data from 1975 to 2015 to examine the effect of remittance on economic growth of Ghana. Augmented Dickey Fuller and Philip-Perron unit root tests were carried out to examine the stationarity properties of the data. Bounds test approach to cointegration within the framework of autoregressive distributed lag (ARDL) model was employed. The study concludes that remittance and economic growth have positive relationship both in the short and long run though insignificant. The study also concludes that trade openness and government expenditure are the short run determinants of economic growth whereas good governance, trade openness, financial development, labour force and government expenditure are the long run determinants of economic growth of Ghana considering the period under study.

5.4 Recommendations

The following recommendations are made based on the findings from the study.

The study revealed that a positive relationship exists between international remittances and economic growth. It is therefore recommended that policies regarding emigration should be structured properly to mobilize migrant capital to enhance economic growth.

The study shows that trade openness and economic growth are negatively related, it is therefore recommend that government should implement policies that can motivate people to export more and import less to change the negative effect of trade openness on economic growth. Citizens must also be encouraged to patronage locally produced goods which will reduce the amount of imported goods to enhance economic growth.

Lastly, the study has shown that there is negative relationship between financial development and economic growth. It is recommended that policies that will allow financial institutions to mobilize money should be put into place. It will ensure that more funds will be accessible to the private sector for investment.



REFERENCES

- Adams, Jr. R. (1996). *The effect of international remittances on poverty, inequality and development in rural Egypt*, "Research Report 86. International Food Policy Research Institute, Washington, DC.
- Adams, Jr. R. (2004). *Remittances, Selection Bias and Poverty in Guatemala*'' . *World Bank. Policy Research working paper 3418*. World Bank, Washing, DC.
- Adams, R. H. (2007). *An Overview of Data Contained in the 2005/06 Ghana Living Standards Survey (GLSS 5) on Migration and Remittances*. Unpublished paper, [online] available at: http://www.ssrc.org/workspace/images/crm/new_publication_3/%7Bebbb84de-b74f-de11-afac-001cc477ec70%7D.pdf
- Adams, Jr., & Cuecuecha, A. (2008). ''*Remittances, Consumption and Investment in Ghana*'' , Working Policy Paper No.4515, World Bank Development Department and African Region, World Bank.
- Adams, R. H., & Cuecuecha, A. (2010). ''Remittances Household Expenditure and Investment in Guatemala'' . *World Development*, 38(11):1626-1641, November.
- Addison, E. K. Y. (2005). "The macroeconomic impact of remittances". In Takyiwaa Manuh, ed., *At Home in the World, International Migration and Development, in Contemporary Ghana and West Africa*, pp. 118–38. Accra, Ghana: Sub-Saharan Publishers, Legon.
- Agarwal, R. and Horowitz, A.W. (2002). Are international Remittances Altruism or Insurance? Evidence from Guyana using Multiple-Migrant Household, *World Development*, 30, 11:2033-44.
- Agunias, D. R. (2006). *Remittances and Development: Trends, Impacts and Policy Options: A review of the literature*,'' Migrant Policy Institute, Washington, DC. Bank of Ghana: Notice to the public and operators of Forex and Bureaus .Revised Forex Bureau Regulations, January 2003.[Http:// www.bog.gov.gh/notice 03/.htm](http://www.bog.gov.gh/notice_03/.htm).

- Anyanwu, J. C., & Erhijakpor A. E. O. (2009) "International Remittances and Economic Growth in Africa." *Global Development Studies (Special Issue on Global Labor Migration and Emerging Trends in Development Finance: An Assessment of the Economic and Social Impact of Migrant (Worker) Remittances in Sub Saharan Africa)*, Volume Five, Winter 2008-Summer 2009, Nos. 3-4.
- Bank of Ghana report, (2011). *Inward Remittances to Ghana*.
- Barham, B. & Boucher, S. (1998). Migration, Remittances and Inequality. Estimating the net Effects of Migration on Income Distribution, *Journal of Development Economics*, 55, and pp.
- Binci, M., & Giannelci, G. C. (2012). Impact of remittances on child wellbeing in Vietnam ,University of Florence and IDA and IZA.
- Boafo, C. (2011). "Growing customer base with inward remittances" *Analysis of unibank (Ghana) limited* ,Kwame Nkrumah University of Science and Technology.
- Bollard, A., Mckenzia, A., Morten, M. & Rapoport, H. (2009). "Remittances and the Brain Drain Revisited". The Microdata show that More Educated Migrant Remit more. "Policy Research Working Paper 5113, World Bank, Washington, DC.
- Bracking, S., & Llyod, S . (2008). "Remittances, Poverty Reduction and Informalization in Zimbabwe 2005.6: A Political Economy of Dispossession?" Brook World Poverty Institute Working Paper 28,University of Manchester, UK.
- Bridi, H. (2005). "Consequences of Labour Migration for the Developing Countries Management of Remittances." World Bank Brussels Office.
- Bugamell, M., & Paterno, F. (2005). *Do Worker's Remittances Reduce the Probability of current Account Reversals*". World Bank Policy Research working Paper No. 3766.
- Business Daily Africa. (2010). "Mobile Money Transform Uganada. "September 7. (6)1143-54.
- Carling, J. (2005). *Migrant Remittances and development cooperation*". International Peace Research Institute, PRIO Report

- Chami, R., Fullenkamp, C., & Jahjah, S. (2003). *Are immigrant remittance flows a source of capital for development?* Working Paper WP/03/189). Washington, DC
- Daianu, D., Voinea, L., & Tolici, M. (2001). "Balance of payments financing in Romania: The role of remittances". Romania Center for Economic Policies, Working Paper No.21.
- Docquier, F. & Rapoport, H. (2003). "Remittances and Inequality": *A Dynamic Migration Model*. IZA Discussion Paper Series No. 808, Institute for the Study of Labor, June.
- De Haas, H. (2007). "international migrant, remittances and development: myths and facts *International migrant, remittances and development: myths and facts* "Third World
- Das, A. & Serieux, J. (2010). *Remittances and reverse flows in developing countries. (IDEA's Working Paper Series Paper No.02/2010)*. New Delhi: International Development Economics Associates.
- Quarterly, P. (2010). *Foreign Aid in the Access to Health Care services in Developing Countries.* Working Paper, Central Extension Resources Developing Institute (CERDI), Clermont-Ferand, France.
- Dickey, D. A., & Fuller, W.A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association* 74 427-431.
- Drabo, A., & Ebeka, C. (2010). "Remittances, Public Health Sending
- Durand, J., Parrado, E. A., & Massey, D. S. (1999). "Migrant dollars and Development": A Reconsideration of the Mexican Case, " *International Migration Review* (30:2), 423 444.
- Ebeka, C. (2010). "The effect of Remittance on Child Labour: Cross Country Evidence." *Economics Bulletin* 30(1), 351-64
- Economics Times (2010). "BhartiCet RBI Nod for Mobile Money services". 'September 17.<http://economicctimes.indiatimes.com/articlesshow/6559841.cms?prt> page

- Ellerman, D. (2003). *Policy Research on Migration and Development World Bank Policy Research Working Paper 3117*, August.
- EL Qorchi, M., Maimbo, S.M. and Wilson, J.F. (2003). *Informal Funds Transfer Systems: An Analysis of the Informal Hawala System*, International Monetary Funds, Washington, DC.
- Fayissa, B., & Nsiah, C. (2010) *The impact of Remittances on Economic Growth and Development in Africa.*: Department of Economics and Finance, Middle Tennessee State University, Murfreesboro, USA
- GLSS.(The Ghana Living Standard Survey) –Round six
www.statsghana.gov/docfiles/glss5_report
- Hulme, D., Moore, K. & Shepherd, A. (2001). “Chronic poverty: Meanings and analytical frameworks”. Chronic Poverty Research Centre Working Paper 2, Institute for Development and Policy Management, University of Manchester.
- Jonhansen N. (2008) *the impact of international remittances on receiving countries at the micro and macro level and policy options for increasing remittances effectiveness* ’’:Reviewing the literature. Maastricht University,
- IEA (Institution of Economic Affairs) *‘determinants of economic growth in Ghana’*: IEA monograph no. 14.
- IFAD(International Fund for Agriculture and Development. (2009). *‘Sending Money Home to Africa: Remittance Markets Enabling Environment and Prospects.* ’`Study report, IFAD, Rome.
- IMF (International Monetary Fund), *International Transactions in Remittances: Guide for compilers and Users*. Washington, DC.
- IMF and World Bank. (2009). *A Review of Some Aspects of the Low- income Country Debt sustainability framework*. “Policy Paper. IMF and World Bank, Washington, DC
- IMF. (2010) *Balance of Payment Statistics Year book 2010*.Washington, DC
- Iqbal, Z. & Scatter, A. (2010) *‘Whether worker’s remittances contribute to economic growth in Pakistan’*

- Karagoz, K. (2009) "worker's remittances and economic growth": Evidence from Turkey, *Journal of Yasar University*, <http://py.yasar.edu>
- Ketkar, S., & Ratha, D. (2009). *Innovative Finance and Development*, "New Paths to Funding" Finance and Development, International Monetary Fund, Washington, DC.
- Litchfield, J. & Waddington, H. (2003) "*Migration and Poverty in Ghana: Evidence from the Ghana Living Standards Survey*". University of Sussex, IDS Migration Working Paper Number 10.
- Lucas, R. E., and Stark, O. (1985). Motivations to Remit: Evidence from Botswana. "*Journal of Political Economy* 83(5):901-18
- Lucas, R. E. (1982), 'Outmigration, remittances and investment in rural areas', in *Migration in Botswana: Patterns, Causes and Consequences*, National Migration Study, Vol. 3, Government Printers: Gaborone, pp. 627-653.
- Lipton, M. (1980), "Migration from Rural Areas of Poor Countries: The Impact of Rural Productivity and Income Distribution", *World Development*, 8, 1 – 24.
- Lopez-Cordoba, E. (2004), *Globalization, Migration and Development: The Role of Mexican Migrant Remittances*. Washington, DC: Inter-American Development Bank
- Maimbo, S., Tanial, S., & Struchacz, N. (2010). *Facilitating Cross-Border Mobile Banking in Southern Africa*. "Economic Premise No.26, World Bank, Washington, DC.
- Massey, D. S. & Parrad, E. A. (1998). "International Migration and Business formation in Mexico" *Social Science Quarterly* 79(1), 1-20
- Mckay & Deshingkar (2014). Internal remittances and poverty further evidence from Africa and Asia working paper. 12 March 2014, Dept University of Sussex web: <http://migratingoutofpoverty.dfid.gov.uk>
- Mckenzie, D. & Rapoport, H. (2010). "Can Migration Reduce Education Attainment? Evidence from Mexico." *Journal of Population Economics*. Published online: DOI No.10.1007/s 00148-010-0316-x. <http://www.springerlink.com/content/95ht846m8m306517>

Mohapatra, J., George, J., & Ratha, D. (2009) ``*Remittances and Natural Disasters. Ex-Post Response and Contribution to Ex-Ante Preparedness*``. Policy Research Working Paper 4972. World Bank, Washington, DC.

MPC (Monetary Policy Committee), (2017) Monetary Policy Report

MPI Data Hub, Migration Facts, Statistics and Maps website

<http://www.migrationinformation.org/datahub/remittances.cfm>

Orozco, M. (2003): ``*Worker Remittances: An International Comparison*,`` Working paper commissioned by the Multilateral Investment Fund of the Inter-American Development Bank.

Orozo, M. (2009). ``*Emerging Markets for Rwanda: Remittance Transfer, its Market place and financing intermediation*`` Report, Market Place inter-American Dialogue, Washington DC.

Ratha, D. (2003). ``*Workers' Remittances: An Important and stable source of External Development Finance*.`` Chapter 7 in Global Development Finance 2003, World Bank, Washington DC. Pp.157.175.

Ratha, D. (2007). ``Leveraging Remittances for Development ``. Policy Brief (June), Migration Policy Institute, Washington, Dc.

Ratha, D., Mohapatra, S., and Silwal, A. (2012). Remittances to developing countries will surpass \$400 billion in 2012. (Migration and Development Brief No. 17). Washington, DC: World Bank.

Rapoport, H., & Docquier, F. (2005). *The Economics of Migrants' Remittances*, in *Handbook on the Economics of Reciprocity, Giving, and Altruism*, ed. by Louis-Andre Gerard-Varet, Serge-Christophe Kolm, and Jean Mercier Ythier (Amsterdam: North Holland, forthcoming).

Sorensen, N. N. (2004). ``Migrant Remittance as a Development Tool: The case of Morocco? Working Paper 2, International Organization for Migration, Geneva. [Http://www.Belgium.iom.int/pa](http://www.Belgium.iom.int/pa).

Sander, C. (2003). ``*Migrant Remittances to Developing Countries*``: A Scoping Study, A Paper Prepared for DFID, Bannock Consulting.

- Sander, C., & Maimbo, S. M. (2003). *“Migrant Labour Remittances in Africa: Reducing Obstacles to Developmental Contributions,”* African Region Working Paper Series No. 64, World Bank.
- Stark, O., (1980). 'On the role of urban-to-rural remittances in rural development', *Journal of Development Studies* 16: 369
- Taylor, J. E. & Wyatt, T. J. (1996). “The shadow value of Migrant Remittances, Income and Inequality in a Household-farm Economy”. *The journal of development studies*.32(6).899-912.
- Tevera, D. & Chikanda, A. (2009).*“Migrant Remittances and Household Survival in Zimbabwe”*. Working Paper Southern African Migration project, Cape Town.
- Tiemoko, R. (2003). *Migration, Return and Socio-Economic Change in Africa: The Role of the family*. Sussex Center for Migration Research, working paper No.15 March 2003.
- Wong (2006) ` *The Gendered politics of Remittances in Ghanaian transnational families*” Department of Geography Unit of Wisconsin-Madison.
- World Bank (2006). *Global Economic Prospects 2006: Economic Implication of Remittances and Migration*, Washington, DC.
- World Bank (2010). *Remittances Prices worldwide (database)* Washington, DC.
- World Bank (2016). *World Bank Development indicators (database)*, World Bank, Washington D.C.
- World Bank.(2011) *Global Economic Prospect 2011: Economic Implication of Remittances and Migration*, Washington, DC.
- World Banks (2016). *World Development Indicators*. Washington DC: World Bank.
- Wouterse, F. (2009). *Remittances, poverty, inequality and welfare: Evidence from the Central Plateau of Burkina Faso*, Presented at the PEGNet Conference 2009: Policies for Reducing Inequality in the Developing World, Institute of Social Studies, The Hague, 3-4 September 2009. <http://www.pegnet.ifw-kiel.de/activities/wouterse.pdf>

Wouterse, F. (2006). *Survival or Accumulation Migration and Rural Households in Burkinafaso*. Wageningen University and Research Center, Wageningen

Yang, D., & Martinez, C. (2006), “*Remittances and Poverty In Migrants' Home Areas: Evidence from the Philippines*”, in C. Ozden and M. Schiff (Eds.), *International Migration, Remittances and the Brain Drain*, World Bank, Washington, DC.

APPENDIX

Dependent Variable: LNGDP
 Method: ARDL
 Date: 07/29/17 Time: 11:36
 Sample (adjusted): 1982 2015
 Included observations: 34 after adjustments
 Maximum dependent lags: 2 (Automatic selection)
 Model selection method: Akaike info criterion (AIC)
 Dynamic regressors (2 lags, automatic): LNINF PS LNTRADE LNREM
 LNMS LNLF LNGEXP
 Fixed regressors: C
 Number of models evaluated: 4374
 Selected Model: ARDL(2, 2, 1, 2, 1, 2, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	-0.038586	0.226153	-0.170621	0.8671
LNGDP(-2)	0.218275	0.123642	1.765372	0.1010
LNINF	-0.001875	0.037835	-0.049559	0.9612
LNINF(-1)	0.065006	0.040594	1.601368	0.1333
LNINF(-2)	-0.044940	0.032518	-1.382003	0.1903
PS	0.011420	0.012314	0.927443	0.3706
PS(-1)	0.027045	0.014902	1.814812	0.0927
LNTRADE	-0.260135	0.103077	-2.523682	0.0254
LNTRADE(-1)	-0.172628	0.193702	-0.891207	0.3890
LNTRADE(-2)	0.286994	0.109405	2.623227	0.0211
LNREM	0.151068	1.231952	0.122625	0.9043
LNREM(-1)	2.110390	1.897828	1.112003	0.2863
LNMS	-0.797324	0.425597	-1.873425	0.0837
LNMS(-1)	-1.004782	0.689132	-1.458039	0.1686
LNMS(-2)	-0.324718	0.195102	-1.664347	0.1199
LNLF	0.639713	0.913895	0.699986	0.4963
LNLF(-1)	-0.365152	1.057679	-0.345239	0.7354
LNLF(-2)	1.692621	0.849930	1.991483	0.0679
LNGEXP	0.579797	0.073772	7.859306	0.0000
LNGEXP(-1)	-0.155540	0.109722	-1.417582	0.1798
C	-2.043548	2.052405	-0.995684	0.3376
R-squared	0.998339	Mean dependent var	13.82501	

Adjusted R-squared	0.995785	S.D. dependent var	0.867577
S.E. of regression	0.056329	Akaike info criterion	-2.641344
Sum squared resid	0.041248	Schwarz criterion	-1.698592
Log likelihood	65.90285	Hannan-Quinn criter.	-2.319839
F-statistic	390.7686	Durbin-Watson stat	2.690952
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Bounds Test

Date: 07/29/17 Time: 11:37

Sample: 1982 2015

Included observations: 34

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	3.827963	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

Test Equation:

Dependent Variable: D(LNGDP)

Method: Least Squares

Date: 07/29/17 Time: 11:37

Sample: 1982 2015

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.218275	0.123642	-1.765372	0.1010
D(LNINF)	-0.001875	0.037835	-0.049559	0.9612
D(LNINF(-1))	0.044940	0.032518	1.382003	0.1903
D(PS)	0.011420	0.012314	0.927443	0.3706
D(LNTRADE)	-0.260135	0.103077	-2.523682	0.0254
D(LNTRADE(-1))	-0.286994	0.109405	-2.623227	0.0211
D(LNREM)	0.151068	1.231952	0.122625	0.9043
D(LNMS)	-0.797324	0.425597	-1.873425	0.0837
D(LNMS(-1))	0.324718	0.195102	1.664347	0.1199
D(LNLF)	0.639713	0.913895	0.699986	0.4963
D(LNLF(-1))	-1.692621	0.849930	-1.991483	0.0679
D(LNGEXP)	0.579797	0.073772	7.859306	0.0000

C	-2.043548	2.052405	-0.995684	0.3376
LNINF(-1)	0.018192	0.049375	0.368442	0.7185
PS(-1)	0.038465	0.012128	3.171575	0.0074
LNTRADE(-1)	-0.145769	0.072351	-2.014761	0.0651
LNREM(-1)	2.261458	1.352976	1.671470	0.1185
LNMS(-1)	-2.126823	0.539368	-3.943177	0.0017
LNL(-1)	1.967182	0.585979	3.357085	0.0052
LNGEXP(-1)	0.424257	0.119134	3.561174	0.0035
LNGDP(-1)	-0.820312	0.202327	-4.054381	0.0014
R-squared	0.953944	Mean dependent var	0.078206	
Adjusted R-squared	0.883090	S.D. dependent var	0.164741	
S.E. of regression	0.056329	Akaike info criterion	-2.641344	
Sum squared resid	0.041248	Schwarz criterion	-1.698592	
Log likelihood	65.90285	Hannan-Quinn criter.	-2.319839	
F-statistic	13.46337	Durbin-Watson stat	2.690952	
Prob(F-statistic)	0.000011			

ARDL Cointegrating And Long Run Form

Dependent Variable: LNGDP

Selected Model: ARDL(2, 2, 1, 2, 1, 2, 2, 1)

Date: 07/29/17 Time: 11:38

Sample: 1980 2015

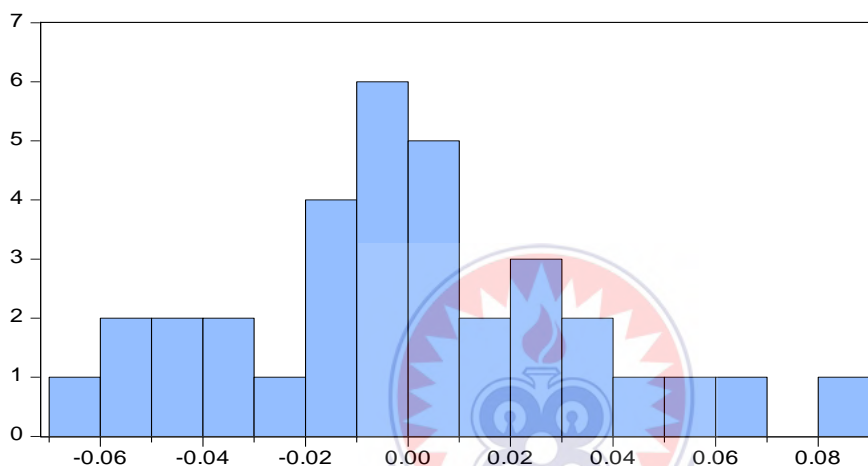
Included observations: 34

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP(-1))	-0.218275	0.123642	-1.765372	0.1010
D(LNINF)	-0.001875	0.037835	-0.049559	0.9612
D(LNINF(-1))	0.044940	0.032518	1.382003	0.1903
D(PS)	0.011420	0.012314	0.927443	0.3706
D(LNTRADE)	-0.260135	0.103077	-2.523682	0.0254
D(LNTRADE(-1))	-0.286994	0.109405	-2.623227	0.0211
D(LNREM)	0.151068	1.231952	0.122625	0.9043
D(LNMS)	-0.797324	0.425597	-1.873425	0.0837
D(LNMS(-1))	0.324718	0.195102	1.664347	0.1199
D(LNL)	0.639713	0.913895	0.699986	0.4963
D(LNL(-1))	-1.692621	0.849930	-1.991483	0.0679
D(LNGEXP)	0.579797	0.073772	7.859306	0.0000
CointEq(-1)	-0.820312	0.202327	-4.054381	0.0014

Cointeq = LNGDP - (0.0222*LNINF + 0.0469*PS -0.1777*LNTRADE +
2.7568*LNREM -2.5927*LNMS + 2.3981*LNL + 0.5172*LNGEXP
-2.4912)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINF	0.022177	0.060556	0.366218	0.7201
PS	0.046891	0.017692	2.650337	0.0200
LNTRADE	-0.177700	0.062081	-2.862408	0.0133

LNREM	2.756828	1.559722	1.767512	0.1006
LNMS	-2.592702	0.576004	-4.501188	0.0006
LNLF	2.398091	0.405622	5.912127	0.0001
LNGEXP	0.517190	0.052421	9.866099	0.0000
C	-2.491185	2.274172	-1.095425	0.2932



Series: Residuals	
Sample 1982 2015	
Observations 34	
Mean	1.28e-15
Median	-0.002606
Maximum	0.086476
Minimum	-0.064843
Std. Dev.	0.035354
Skewness	0.232960
Kurtosis	2.827603
Jarque-Bera	0.349635
Probability	0.839610

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	3.602151	Prob. F(1,12)	0.0820
Obs*R-squared	7.849760	Prob. Chi-Square(1)	0.0051

Test Equation:

Dependent Variable: RESID

Method: ARDL

Date: 07/29/17 Time: 12:11

Sample: 1982 2015

Included observations: 34

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	0.295490	0.258562	1.142819	0.2754
LNGDP(-2)	-0.083853	0.121201	-0.691850	0.5022
LNINF	-0.000143	0.034536	-0.004140	0.9968
LNINF(-1)	0.001176	0.037060	0.031745	0.9752
LNINF(-2)	0.001526	0.029693	0.051387	0.9599
PS	0.000933	0.011251	0.082911	0.9353
PS(-1)	-0.009946	0.014577	-0.682270	0.5080
LNTRADE	-0.008411	0.094194	-0.089293	0.9303

LNTRADE(-1)	0.112778	0.186530	0.604609	0.5567
LNTRADE(-2)	-0.055395	0.104043	-0.532419	0.6042
LNREM	0.252799	1.132396	0.223242	0.8271
LNREM(-1)	-0.335952	1.741372	-0.192924	0.8502
LNMS	-0.120364	0.393631	-0.305779	0.7650
LNMS(-1)	0.352029	0.655821	0.536776	0.6012
LNMS(-2)	0.037212	0.179167	0.207695	0.8390
LNLF	0.418561	0.862869	0.485081	0.6364
LNLF(-1)	-0.327565	0.980763	-0.333990	0.7442
LNLF(-2)	-0.450835	0.811373	-0.555645	0.5887
LNGEXP	0.004537	0.067382	0.067339	0.9474
LNGEXP(-1)	-0.130088	0.121363	-1.071890	0.3049
C	-0.034408	1.873540	-0.018365	0.9856
RESID(-1)	-0.666946	0.351406	-1.897933	0.0820
<hr/>				
R-squared	0.230875	Mean dependent var	1.28E-15	
Adjusted R-squared	-1.115093	S.D. dependent var	0.035354	
S.E. of regression	0.051417	Akaike info criterion	-2.845023	
Sum squared resid	0.031725	Schwarz criterion	-1.857378	
Log likelihood	70.36539	Hannan-Quinn criter.	-2.508207	
F-statistic	0.171531	Durbin-Watson stat	2.446068	
Prob(F-statistic)	0.999769			

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.346439	Prob. F(20,13)	0.9838
Obs*R-squared	11.82102	Prob. Chi-Square(20)	0.9221
Scaled explained SS	1.579196	Prob. Chi-Square(20)	1.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 07/29/17 Time: 11:42

Sample: 1982 2015

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.080407	0.078054	1.030140	0.3217
LNGDP(-1)	0.003594	0.008601	0.417820	0.6829
LNGDP(-2)	0.001732	0.004702	0.368297	0.7186
LNINF	-0.000481	0.001439	-0.333974	0.7437
LNINF(-1)	0.000948	0.001544	0.613994	0.5498
LNINF(-2)	-0.000447	0.001237	-0.361357	0.7236
PS	-3.08E-05	0.000468	-0.065818	0.9485
PS(-1)	0.000334	0.000567	0.589894	0.5654
LNTRADE	0.002079	0.003920	0.530240	0.6049
LNTRADE(-1)	0.000162	0.007367	0.022031	0.9828
LNTRADE(-2)	-4.67E-05	0.004161	-0.011231	0.9912
LNREM	-0.014401	0.046852	-0.307380	0.7634
LNREM(-1)	-0.024274	0.072176	-0.336314	0.7420
LNMS	0.002754	0.016186	0.170166	0.8675

LNMS(-1)	0.016186	0.026208	0.617590	0.5475
LNMS(-2)	-0.005113	0.007420	-0.689091	0.5029
LNLF	0.004706	0.034756	0.135411	0.8944
LNLF(-1)	-0.025023	0.040224	-0.622077	0.5446
LNLF(-2)	-0.000853	0.032323	-0.026403	0.9793
LNGEXP	-0.000135	0.002806	-0.048129	0.9623
LNGEXP(-1)	-0.001664	0.004173	-0.398680	0.6966
<hr/>				
R-squared	0.347677	Mean dependent var	0.001213	
Adjusted R-squared	-0.655896	S.D. dependent var	0.001665	
S.E. of regression	0.002142	Akaike info criterion	-9.180069	
Sum squared resid	5.97E-05	Schwarz criterion	-8.237317	
Log likelihood	177.0612	Hannan-Quinn criter.	-8.858564	
F-statistic	0.346439	Durbin-Watson stat	2.520079	
Prob(F-statistic)	0.983754			

Ramsey RESET Test

Equation: UNTITLED

Specification: LNGDP LNGDP(-1) LNGDP(-2) LNINF LNINF(-1) LNINF(-2)
 PS PS(-1) LNTRADE LNTRADE(-1) LNTRADE(-2) LNREM LNREM(-1)
 LNMS LNMS(-1) LNMS(-2) LNLF LNLF(-1) LNLF(-2) LNGEXP
 LNGEXP(-1) C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.393607	12	0.7008
F-statistic	0.154927	(1, 12)	0.7008

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000526	1	0.000526
Restricted SSR	0.041248	13	0.003173
Unrestricted SSR	0.040722	12	0.003394

Unrestricted Test Equation:

Dependent Variable: LNGDP

Method: ARDL

Date: 07/29/17 Time: 11:43

Sample: 1982 2015

Included observations: 34

Maximum dependent lags: 2 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (2 lags, automatic):

Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNGDP(-1)	-0.075338	0.251831	-0.299160	0.7699
LNGDP(-2)	0.369991	0.406107	0.911068	0.3802
LNINF	-0.003615	0.039377	-0.091816	0.9284
LNINF(-1)	0.111652	0.125724	0.888072	0.3920
LNINF(-2)	-0.079594	0.094247	-0.844525	0.4149
PS	0.018365	0.021760	0.843983	0.4152
PS(-1)	0.043204	0.043850	0.985252	0.3439
LNTRADE	-0.464632	0.530370	-0.876052	0.3982
LNTRADE(-1)	-0.307661	0.397268	-0.774441	0.4537

LNTRADE(-2)	0.481483	0.506909	0.949841	0.3609
LNREM	0.546525	1.622543	0.336832	0.7421
LNREM(-1)	3.843338	4.820398	0.797307	0.4408
LNMS	-1.460611	1.741682	-0.838621	0.4181
LNMS(-1)	-1.794757	2.129795	-0.842690	0.4159
LNMS(-2)	-0.569191	0.653061	-0.871574	0.4005
LNLF	1.225359	1.762696	0.695162	0.5002
LNLF(-1)	-0.568811	1.210033	-0.470079	0.6467
LNLF(-2)	2.975615	3.376012	0.881399	0.3954
LNGEXP	1.016057	1.110986	0.914554	0.3784
LNGEXP(-1)	-0.256157	0.279682	-0.915887	0.3778
C	-9.974731	20.26148	-0.492300	0.6314
FITTED^2	-0.026935	0.068432	-0.393607	0.7008

R-squared	0.998361	Mean dependent var	13.82501
Adjusted R-squared	0.995491	S.D. dependent var	0.867577
S.E. of regression	0.058254	Akaike info criterion	-2.595348
Sum squared resid	0.040722	Schwarz criterion	-1.607703
Log likelihood	66.12092	Hannan-Quinn criter.	-2.258533
F-statistic	347.9754	Durbin-Watson stat	2.729065
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Dependent Variable: LNGDP

Method: Least Squares (Gauss-Newton / Marquardt steps)

Date: 07/29/17 Time: 11:43

Sample (adjusted): 1982 2015

Included observations: 34 after adjustments

LNGDP = C(1)*LNGDP(-1) + C(2)*LNGDP(-2) + C(3)*LNINF + C(4)*LNINF(-1) + C(5)*LNINF(-2) + C(6)*PS + C(7)*PS(-1) + C(8)*LNTRADE + C(9)*LNTRADE(-1) + C(10)*LNTRADE(-2) + C(11)*LNREM + C(12)*LNREM(-1) + C(13)*LNMS + C(14)*LNMS(-1) + C(15)*LNMS(-2) + C(16)*LNLF + C(17)*LNLF(-1) + C(18)*LNLF(-2) + C(19)*LNGEXP + C(20)*LNGEXP(-1) + C(21)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.038586	0.226153	-0.170621	0.8671
C(2)	0.218275	0.123642	1.765372	0.1010
C(3)	-0.001875	0.037835	-0.049559	0.9612
C(4)	0.065006	0.040594	1.601368	0.1333
C(5)	-0.044940	0.032518	-1.382003	0.1903
C(6)	0.011420	0.012314	0.927443	0.3706
C(7)	0.027045	0.014902	1.814812	0.0927
C(8)	-0.260135	0.103077	-2.523682	0.0254
C(9)	-0.172628	0.193702	-0.891207	0.3890
C(10)	0.286994	0.109405	2.623227	0.0211
C(11)	0.151068	1.231952	0.122625	0.9043
C(12)	2.110390	1.897828	1.112003	0.2863
C(13)	-0.797324	0.425597	-1.873425	0.0837
C(14)	-1.004782	0.689132	-1.458039	0.1686
C(15)	-0.324718	0.195102	-1.664347	0.1199
C(16)	0.639713	0.913895	0.699986	0.4963
C(17)	-0.365152	1.057679	-0.345239	0.7354

C(18)	1.692621	0.849930	1.991483	0.0679
C(19)	0.579797	0.073772	7.859306	0.0000
C(20)	-0.155540	0.109722	-1.417582	0.1798
C(21)	-2.043548	2.052405	-0.995684	0.3376

R-squared	0.998339	Mean dependent var	13.82501
Adjusted R-squared	0.995785	S.D. dependent var	0.867577
S.E. of regression	0.056329	Akaike info criterion	-2.641344
Sum squared resid	0.041248	Schwarz criterion	-1.698592
Log likelihood	65.90285	Hannan-Quinn criter.	-2.319839
F-statistic	390.7686	Durbin-Watson stat	2.690952
Prob(F-statistic)	0.000000		

