MAKERERE UNIVERSITY

COLLEGE OF BUSINESS AND MANAGEMENT SCIENCES

SCHOOL OF ECONOMICS

FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: EVIDENCE FROM LIBERIA

BY

ROOSEVELT S. PROWD

REG NO: 2016/HD06/1201X

STUDENT NO: 216019776

A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILMENT OF THE AWARD OF THE DEGREE OF MASTER OF ARTS IN ECONOMICS OF MAKERERE UNIVERSITY

DECEMBER, 2018

DECLARATION

I hereby declare that this dissertation is my own work towards the award of Master of Arts degree in Economics. To the best of my knowledge and with the exception of those acknowledged in the text, it does not contain any material previously published or accepted for any award.

Rooosevelt S. Prowd	.....	12-12-2018
Student Name	**Signature**	**Date**
Certified by;		
Dr. Tom Mwebaze	.....	14/12/2018
Supervisor	**Signature**	**Date**
Certified by;		
Prof. Eria Hisali	.....	14.12.18
Supervisor	**Signature**	**Date**

DEDICATION

To my faithful God, my big brother Monday Francis Prowd, and the memory of my late stepmother, Sister Mary Sponsa Beltran, OSF.

ACKNOWLEDGEMENTS

I would first and foremost like to thank the Almighty God for enabling me to complete this journey. Isaiah 26: 12, ―All I have achieved is because of God. I am particularly grateful to the African Economic Research Consortium (AERC) for awarding me the scholarship to undertake my master's degree studies. I am grateful to the University of Liberia where I was nurtured for my undergraduate degree and Makerere University, School of Economics for according me admission and taking me through the various stages of my master's degree studies.

I am heavily indebted to my supervisors, Professor Hisali Eria and Dr. Tom Mwebaze for their guidance, direction, critical review and timely feedback in the various phases of my dissertation writing. I learnt a lot under their guidance. I owe special thanks to all my lecturers from both the University of Liberia and Makerere University for the knowledge they imparted in me. Additionally, I remain appreciative to my JFE/CMAP Monetary and Econometrics lecturers (August-September 2017) for contributing toward my preparation. My sincere thanks go to Professor Geegbae A. Geegbae, Vice president of Institutional development, University of Liberia for his indefatigable support in getting me the scholarship and encouragement throughout my studies.

I appreciate Jerry Cebuski African Disability Foundation for the relentless support they have accorded me throughout my studies, I will forever be indebted. My brothers; Monday, Sam, and Henry, thanks for your support, prayers and encouragement. To my precious friends Heagbetus, Titoe and Genesis, your prayers, support and encouragement were instrumental to my success. Finally, I cannot forget my classmates whom I tirelessly worked with to beat deadlines in our master's work. Special recognition to Kahunde for encouraging me to always soldier on, your kindness overwhelms me. Despite all this able assistance, the opinions expressed in this dissertation are solely those of the author and do not represent the views of any of the recognized person(s) or institution(s).

I therefore bear the full responsibility for any errors and/or omissions. I am delighted to have put this dissertation together, and confident that it will contribute to the ongoing debate on financial development and economic growth.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

ACRONYMS/ABREVIATIONS

ADF	-	Augmented Dickey-Fuller
ARDL	-	Autoregressive Distributive Lag
ATM	-	Automatic Teller Machine
CAR	-	Capital Adequacy Ratio
CBL	-	Central Bank of Liberia
CUSUM	-	Cumulative sum of recursive residuals
CUSUMSQ	-	Cumulative sum of square recursive residuals
DCPS	-	Domestic Credit to Private Sector
ECOWAS	-	Economic Community of West African States
ECM	-	Error correction model
FD	-	Financial Development
FDI	-	Foreign Direct Investment
GFC	-	Gross fixed Capital formation
GS	-	Government spending
LATA	-	Liberia Agriculture Transformation Agenda
LRD	-	Liberian Dollars
MENA	-	Middle East North Africa
MFIs	-	Microfinance Institutions
NBFI	-	Non-Bank Financial Institution
NPLs	-	Non-Performing Loans
PG	-	Annual growth rate of population
RGDP	-	Real gross domestic product growth
ROE	-	Return on Equity
SME	-	Small Medium Enterprise
TO	-	Trade openness
US	-	United States
WDI	-	World Development Indicator

ABSTRACT

The relationship between financial development and economic growth is a contentious issue. For developing countries, empirical studies have provided conflicting results. This study seeks to empirically explore the relationship between financial development and economic growth in Liberia over the period 1960-2016. Consequently, the study employs the bounds testing approach to co-integration and error correction models developed within the Autoregressive Distributed Lag (ARDL) framework to explore the long-run and short-run effects of financial development on economic growth in Liberia. The empirical results indicate the existence of a long run relationship between economic growth and financial development in Liberia. The result of the error correcting term (ECM) indicates an adjustment to the equilibrium state after a shock. The lagged error term coefficient has the correct sign and is significant at 1% test level. This suggests that about 92% of distortions created by shocks in the preceding year can be restored in the current year. This serves to further affirm the presence of long-run financial development and economic growth nexus in Liberia. In the short run, however, the results showed that financial development and economic growth are insignificantly related. Consistent with the findings, it is recommended that processes and institutions that facilitate a sound and competitive financial market must be improved for efficient allocation of credit and insurance, collection of loans, and secure and efficient payment services based on transaction accounts, as well as the protection of depositors and safety of the financial system. These reforms would contribute to improving the quality and affordability of financial services available to consumers and business of all sizes, particularly SMEs and to low-income households and thus spur growth.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Universally, the paramount concern of every economy is the attainment of sustained economic growth and development through changes in production levels of goods and services. Solow (1956) identified some factors such as capital, labor and land as relevant determinants of growth. Technological changes, on the other hand, have been identified by new theories of growth as a vital determinant of growth as it stimulates productivity.

Over the last decades, however, the importance of an effective and adequate financial system has also been recognized to play a cardinal role for increased levels of growth, King and Levine (1993), Easterly (1993), Khan and Senhadji (2000) and Khan et al (2005). This is predicated upon the fact that a more efficient financial system provides better financial services, and this in turn stimulates the economy to increase its gross domestic product (GDP) growth rate.

Financial systems intermediate between lenders and borrowers so that transaction and information costs for both parties can be minimized. The higher the degree of financial development in a country, the wider will be the availability of financial services. The greater the financial development, the higher would be the mobilization of Savings and its allocation to high return projects. Financial development promotes the capital inflows that are associated with emerging markets.

For these reasons among others, developing countries, particularly West African countries, have adopted development strategies that prioritize the modernization of their financial systems. ECOWAS[1] countries have implemented reforms in their financial systems in acquiesce to structural adjustment proposed by the Bretton Woods institutions. The overarching relevance of these reforms is to foster financial development through the reduction of governmental intervention in national financial sectors or the privatization of banks. (Gries et al., 2009) asserts that the reform policies have been expected to promote growth via higher mobilization of savings or a rise in domestic and foreign investments.

[1]ECOWAS is composed of Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea,Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.

To determine the effectiveness of such policies, there is a need for the appropriate relationship between financial development and economic growth to be established. The finance-growth nexus, however, remains a contentious issue in both theoretical and empirical literature as economists, academics, and policy makers hold different views.

The different views that have attended the finance-growth nexus have been summarized by Yousif Khalifa A.I Yousif (2002). In particular, Yousif (2002) highlighted four different hypotheses (namely; supply leading, demand following, feedback, and neutral).

The first view is the "supply leading hypothesis'. According to the proponents of this view, financial development has the following functions; producing cheaper information about possible investment and allocating capital, monitoring firms and exerting corporate governance, trading, diversification and management of risk, mobilizing and pulling of savings, easing exchange of goods and services. Financial development induces investment and thus leads to economic growth. They also argued that financial sector transfers financial resources from low to high growth sectors and leads to improved production of commodities which induce demand for financial services, leading to subsequent growth in other sectors of the economy. McKinnon (1973), Shaw (1973), Greenwood and Jovanovic (1990), Bencivenga and Smith (1991), Hicks (1969), Goldsmith (1969), Arestis et al. (2001), Christopoulos and Tsionas (2004), and Rioja and Valev (2004) are some of the proponents of this view.

The second view is the "demand-following hypothesis" proffered by Robinson (1952). According to this hypothesis, economic growth leads to financial development; in other words, financial development follows economic growth. Robinson argued that as the economy develops or expands its demand for financial services increases and the financial system responds automatically to these demands. Some proponents of this view include Patrick (1966) and Ireland (1994). In particular, Patrick (1966) shows financial development as a consequence of high growth that demands more and better financial services.

The third view is the "feedback hypothesis". According to this view, the two variables have bi-directional causality; that is, financial development leads to economic growth and vice versa. Demetriades and Hussein (1996) carried out an empirically study between financial development and real Gross Domestic Product and found bi-directional causality between the two variables.

Luintel and Khan (1999), in another study, found a bi-directional causality between financial development and economic Growth.

Lastly, Lucas (1988) advanced a fourth view," the neutral hypothesis", which states that there is no causal relationship between financial development and economic growth. Lucas (1988) asserts that the role of the financial system in economic growth is over-stressed. According to Lucas, factors that explain financial development or economic growth are elsewhere. This view is strongly supported by Chandavarkar (1992).

Many studies have examined the validity of each of these contradicting opinions in order to provide clarity on the relationship between financial sector development and Economic growth. Nonetheless, there is no unanimous view on the role of financial sector development to Economic growth.

With particular reference to Liberia, limited studies have looked at the finance-growth connection. Economic growth in Liberia has fluctuated tremendously over the years. The country experienced stable growth in the 1970s. In the 1980s, as well as early-2000s, political instability distorted the economy. The level of savings shrunk, there was human and physical capital flight, government expenditure was diverted from productive activities to war budgeting, this reduced productivity in the country. The economy completely collapsed during the conflict. Liberia's GDP peaked in 1979, began to decline after the 1980 coup, and collapsed outright after the beginning of the war in 1989. GDP fell a stunning 90% between 1987 and 1995.

The economy initially began to rebound after violence subsided in 1996 and elections were held in 1997. But the war soon re-ignited, and the violence reached extreme levels in 2002 and 2003 until the peacekeepers arrived in mid-2003. By the time of the elections in 2005, average income in Liberia was just one-quarter of what it had been in 1987, and just one-sixth of its level in 1979 (Steven Radelet, 2007).

After the turmoil that had hampered growth and destroyed the financial sector from 1989 to 2003, followed a period of restoration of political and economic order in the 2005. A new political leader in Ellen Johnson Sirleaf was elected in 2005 and, through her instrumentality, the Liberian economy is now on a better trajectory again.

1.2 Problem Statement

Over the last decade, the government of Liberia has adopted programs of economic recovery and development strategies that prioritize the modernization of the financial sector. As a result, the banking system has grown increasingly in recent years. Total assets reached some US$864.1 million in October 2015 (or around 42.9 percent of GDP, compared with just US$157.5 million in 2006). Credit to the private sector grew 23.7 percent to US $367.9 or 16.9 percent of GDP. Demand deposits increased 7.6 percent from LRD 28.3 billion (US$305.7 million) in December 2014 to LRD 30.4billion (US $328.9 million) in October 2015. Financial intermediation has become more effective and the gross loan-to-deposit ratio has risen from around 55 percent in the late 2000s to 63.3 percent in October 2015.

On the other hand, the average growth rate of the Liberian economy over the last decade has increased and estimated at 6.8 percent compared with 5.4 percent recorded for Sub-Saharan Africa for the same period. In spite of the fact that financial sector has improved and growth has accelerated in recent years, it is still not clear to what extent the financial sector development has contributed to the growth of the Liberian economy.

1.3 Research Objectives

The foremost objective of this study is to investigate the contribution of financial development to economic growth in Liberia over the period 1960-2016. Specifically, the study seeks:

i. To examine the long run contribution of financial development to economic growth in Liberia.
ii. To examine the short run contribution of financial development and economic growth in Liberia.

1.4 Research Questions

To achieve the stated objectives, this study seeks to answer the following the research questions.

i. What is the long run contribution of financial development to economic growth in Liberia?
ii. What is the short run contribution of financial development to economic growth in Liberia?

1.5 Justification of the Study

Every economy requires a sound and efficient financial system to thrive. A more sophisticated and efficient financial system channels resources from small savers to large investors, and thus enables an economy to increase its gross domestic product (GDP[2]) growth rate. This study is very essential because if it can be proven that financial sector development is an engine for economic growth, then policy-makers should focus their attention and resources on creation and promotion of modern financial sectors.

This study is also relevant since it uses time series analysis and it is country specific. Cross-country studies assume that entities of different countries are similar across time, which leads to wrong conclusions about the relationship existing between financial development and economic growth in each country. Countries included in cross-country studies may be different based on several factors including economic and institutional policies they each have adopted. This however necessitates the need to acquire country specific results to enable non-refutable conclusions.

In addendum, this study adds to existing literature by contributing to existing debate on the relationship between financial development and economic growth and advances salient recommendations to aid policy makers.

1.6 Scope of the Study

This study examines the relationship between financial development and growth over time. It uses annually data for the period 1960 to 2016. The study is limited to Liberia to give a better understanding of the relationship since cross country studies do not allow one to examine the relationship exhaustively in terms of time variations.

1.7 Organization of the Study

This study will be presented in six major chapters. Chapter one is being devoted to the background of the study, problem statement, objectives and hypothesis of the study, the scope and significance of the study.

[2]GDP is the sum of gross value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the value of the products.

Chapter two covers an overview of the Liberian financial sector and its contribution towards economic growth. Chapter three presents review of both theoretical and empirical literature related to the subject matter. Chapter four presents discussion on the methodology employed for the study and the sources and type of data used. Chapter five consists of the estimated results from econometric modeling and interpretations. Chapter six provides a summary of the main results and policy recommendations as well as conclusions.

CHAPTER TWO
AN OVERVIEW OF LIBERIA'S FINANCIAL SECTOR AND ITS CONTRIBUTION TOWARDS ECONOMIC GROWTH.

2.0 Introduction

The financial sector of Liberia is highly dualistic: it comprises of both formal and informal sectors. The number of licensed and operating banks in the Liberian banking sector increased from 4 in 2003 to 9 in 2016. There is one development finance company, one deposit-taking microfinance institution, 20 licensed insurance companies with 31 branches across the country, 2 insurance brokerage firms to provide insurance intermediation, 131 registered licensed foreign exchange bureaux (increased from 123 in 2015 to 131 in 2016), 16 registered microfinance institutions (MFIs), 11 licensed Rural Community Finance Institutions (RCFIs), 260 credit unions, 2,300 village savings and loan associations, and 2 mobile money providers established across the country. The number of mobile money agents increased from 912 in 2015 to 2,110 in 2016.

The banking industry witnessed continued growth in its balance sheet in recent years. Total assets, capital and deposits rose by 5.4 percent, 21.2 percent and 3.8 percent in 2016 compared with 7.5 percent, 0.8 percent and 16.0 percent in 2015, respectively. Growth in total loans was 12.3 percent 2015 compared with 21.1 percent a year after. Liquidity for the sector remained strong during the year with a liquidity ratio of 36.8 percent; 21.8 percentage points above the 15 percent minimum requirement. Overall, the financial system has grown stronger and remains resilient, (Central Bank of Liberia's Annual Report, 2014, 2015, 2016).

2.1 The Banking Sector

The number of bank branches by county increased in recent years; eleven of the 15 counties now have at least one bank branch. The growth in branch network is a clear indication of the growing confidence in the banking sector in support of increased economic activities in the country and the goal to provide easy access to financial services throughout the country, (CBL,2016). Table 2.1: shows the expansion of bank branches by county.

Table 2.1: Expansion of Bank Branches by County (2015 and 2016)

County		Number of Branches	
	Banks' presence	**2015**	**2016**
Montserrado	9	51	57
Margibi	4	10	10
Grand Cape Mount	1	1	1
Grand Bassa	6	6	6
Sinoe	1	1	1
Maryland	2	4	4
Bong	3	3	3
Nimba	5	7	7
Lofa	1	2	2
Grand Gedeh	1	1	1
Bomi	1	1	1
Total		**87**	**93**

Source: Central Bank of Liberia, Monrovia, Liberia

2.1.1 Balance Sheet of the Banking Sector

The performance of the banking sector showed strong growth in the balance sheet of the banks. In 2016, total assets grew by 5.4 percent to L$83.2 billion, from L$79.0 billion at end-October 2015. Similarly, total loans and advances increased by 34.2 percent to L$37.9 billion, up from L$33.8 billion during the same period a year ago. Additionally, total capital increased by 21.2 percent, from L$9.8 billion to L$11.9 billion and deposits grew by 2.1 percent to L$54.7 billion, from L$53.6 billion the same period a year ago, (Central Bank of Liberia Annual Report, 2016). Figure 2.1 shows key balance indicators of the Banking sector.

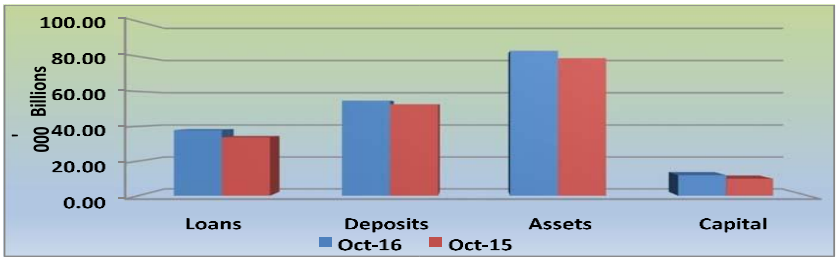


Figure 2.1:: Key Balance Sheet Indicators of the Banking Sector (As at October, 2016)

2.1.2 Financial Soundness Indicators

The financial soundness and performance indicators of the banking sector showed that the sector is stable and contributing towards the overall economic growth and development of the country. However, non-performing loans and profitability remained major challenges in the banking sector, which the CBL and the Liberia Bankers Association are working assiduously to address (CBL, 2016). Table 2.2: shows the financial soundness indicators.

Table 2.2: Industry Financial Soundness Indicators (2015 & 2016) (In Thousands L$) or otherwise stated

Indicators (figures in 000' of L$)	30-OCT-15	30-OCT-16
Gross Assets	79,927,355	83,245,436
Net Assets	75,554,904	78,993,062
Net Loans	29,913,573	33,638,023
Deposits	53,580,210	54,710,998
Reported Capital Net of Provisions	9,894,480	11,923,302
Reported Net Capitalization	13.1%	15.1%
Capital Adequacy Ratio	20.6%	21.4%
Classified Loans to Total Loans	23.8%	16.4%
Non-performing Loans to Total Loans	18.0%	11.8%
Provisions to Classified Loans Net of in Interest Suspense	52.7%	64.3%
Provisions to Non-Performing Loans Net of Interest in Suspense	67.1%	93.8%

Return on Assets	-0.9%	1.1%
Return on Equity	-7.0%	7.8%
Non-interest Income to Total Revenue	51.0%	50.9%
Net Interest Margin over Average Assets	6.2%	6.9%
Liquid Assets to Net Assets	29.0%	27.7%
Net Loans to Deposits	55.8%	61.5%
Liquidity Ratio	39.1%	36.8%

Source: Central Bank of Liberia, Monrovia, Liberia

The banking sector continues to show strong capital position as reflected in the two main capital measures (Capital Adequacy Ratio (CAR) and reported capital net of provisions). This provided the sector with the leverage to continuously support lending to the private sector in the country. With respect to total reported capital, the sector recorded an average position of US$13.5 million, which exceeded the minimum requirement of US$10.0 million and represents an increase of 21.2 percent compared with the average capital for 2015.

Asset quality, on the other hand, measured by the level of Non-Performing Loans (NPLs), witnessed a significant improvement from 18.5 percent in 2015 to 11.8 percent in 2016 due mainly to the stringent policy measures instituted by the CBL against delinquent borrowers, especially the naming and shaming policy. It is worth noting that the current level of NPLs can be partly attributed to the impact of both the EVD[3] and fall in global commodity prices. Gross earning for the period ended October, 2016 stood at L$7.3 billion while net profit was L$934.9 million, compared with a gross earnings position for 2015 of L$6.63 billion and net loss of L$335.0 million.

Return on Equity (ROE) and Return on Asset (ROA) for 2016 were 7.8 percent and 1.1 percent, respectively, compared with negative 6.6 percent and negative 0.8 percent respectively, for 2015, Liquidity remained on a strong path in 2016 with a ratio of 36.8 percent, which is in excess of the minimum liquidity ratio of 15.00 percent. Non-interest income, mainly fees and commissions, constituted the largest portion of the income of the banking sector. Although this percentage has continued to decline over the years, it still points to the issues of low-level of intermediation by banks and the problem of NPLs which requires suspension of interest on NPLs

[3] Ebola Virus Disease

thereby shrinking the interest income component of the commercial banks, (Central Bank Annual Report, 2016).

2.1.3 Commercial Banks' Credits to the Economy

By the end of November 2016, total credit to all sectors of the economy amounted to L$39,249.3 million, indicating an expansion of 15.6 percent relative to the amount recorded at the end of December, 2015. The main drivers of credit growth were; Construction, and Mining & Quarrying sectors; loans and advances to the Trade sub-sector as part of the Trade; Hotel & Restaurant sector as well as the "Other sectors'' contributed significantly to credit growth in the year. Mining & Quarrying expanded by 21.7 percent; Construction by 3.2 percent; Trade, Hotel & Restaurant by 3.3 percent, and the "Others" Sector by 87.3 percent from 2015 to 2016. The "Others Sector" comprises of loans and advances to individuals, the government sector and those not classified under any particular sector.

The expansion in credit was mainly due to resumption of economic activities which were triggered by the improved and promising energy and road infrastructures. As in the previous year, the private sector accounted for nearly 98 percent of total credit for the period. The contribution of the private sector to credit growth reflects the growing activities in the sector which is necessary for a balanced and sustainable growth and development of the economy, (Central Bank Annual Report, 2016). Table 2.3: shows commercial bank loans by economic sectors.

Table 2.3: Commercial Bank Loans by Economic Sectors (2014-November, 2016) (In Millions of L$)

	Dec-14	Share	Dec-15	Share	Nov-16	Share
Agriculture	1,869,181.78	6.8	2,389,737.13	7.0	1,674,034.46	4.3
Mining & Quarrying	177,210.00	0.6	140,715.00	0.4	171,201.69	0.4
Manufacturing	526,910.08	1.9	885,038.64	2.6	441,572.36	1.1
Construction	4,727,719.67	17.2	4,866,858.47	14.3	5,023,508.80	12.8
Trans., Storage & Comm.	2,032,301.28	7.4	2,946,854.84	8.7	1,738,230.39	4.4
Trade, Hotel &Rest.	12,039,093.50	43.8	14,707,810.54	43.3	15,186,369.14	38.7
Other	6,127,194.21	22.3	8,014,401.50	23.6	15,014,349.49	38.3
Total	27,499,610.51	100.0	33,951,416.11	100.0	39,249,266.33	100.0

Source: Central Bank of Liberia, Monrovia, Liberia

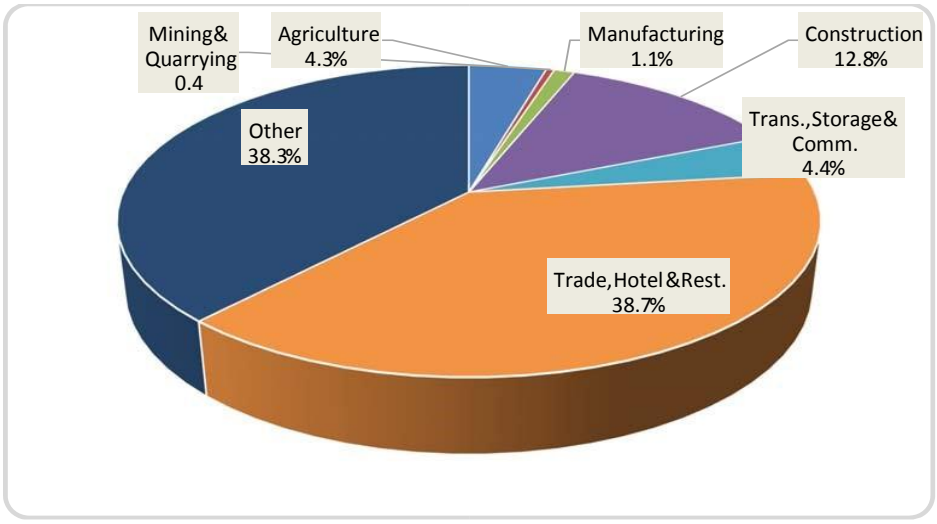


Figure 2.2: Percentage Distribution of Commercial Banks' Loans by Economic Sectors (November, 2016)

2.1.4 Interest Rates

The trends exhibited by the annual average interest rates in the economy showed diverse results. Average lending, personal loan, mortgage and time deposits rates decreased by 2.0, 14.0, 33.0 and 28.0 basis points, respectively, to 13.59 percent, from 13.61 percent, for lending; to 13.94 percent, from 14.07 percent for personal loan; to 14.16 percent from 14.50 percent for mortgage and to 3.77 percent, from 4.05 percent for time deposits rate at the end of December, 2015. On the other hand, the average rates of savings and certificate of deposits both increased by 3.0 and 14.0 basis points, respectively. The decreases in lending, personal loans rates, etc., were reflective of the many efforts by the banking sector to encourage private investment, (Central Bank Annual Report, 2016). Table 2.4: shows average commercial banks' interest rate.

Table 2.4: Average Commercial Banks' Interest Rates (2014 November, 2016)

COMMERCIAL BANKS RATES	2014	2015	Jan-Nov, 2016
Lending Rate	13.50	13.61	13.59
Personal Loan Rate	13.99	14.07	13.94
Mortgage Rate	14.25	14.50	14.16
Time Deposit Rate	4.16	4.05	3.77
Savings Rate	2.00	2.00	2.03
Rate on CD'S	2.25	2.00	2.14

Source: Central Bank of Liberia, Monrovia, Liberia

2.2 Mobile Money Activities

Mobile money activities continued to expand across the 15 counties of Liberia with an increase in the agent network from 912 in 2015 to 2,110 in 2016. The total number of subscribers or users of mobile money significantly increased over the period from 124,071 to 1,034,725 during the same period, with total transaction value of over US$1.7 million and L$320 million.

This increase was in part driven by the CBL's licensing of the second mobile money provider, Cellcom Technologies Inc. Four banks namely, Ecobank Liberia Limited, Guaranty Trust Bank Liberia Limited, United Bank for Africa and International Bank Liberia Limited have been approved as authorized agents to provide mobile money in partnership with Lonestar Cell MTN Mobile Money Inc. and Cellcom Technologies Inc.

Activities of mobile money continued to expand in rural Liberia in alignment with the Liberia Agriculture Transformation Agenda (LATA) project. LATA is being implemented by the Ministry of Agriculture in conjunction with the African Development Bank and leverages on the mobile money platform to bring about sustained economic growth through the payment and receipt of funds to and from farmers in the purchase and payback of farming products. This process brought on board more than hundreds of the small-scale farmers to actively use and facilitate payments using mobile money services across the country, (CBL, 2016)

2.3 Rural Community Finance Institutions

The CBL, in partnership with Afriland First Bank, has supported the establishment of eleven (11) RCFIs operating in eight (8) counties. All of the RCFIs are involved in the payments of civil servants' salaries and nine of the RCFIs are granting salary-based loans. The RCFIs are also involved in providing money remittance services (i.e. local transfers, Western Union & MoneyGram) and plans are underway for them to rollout mobile money services in the future. The total customer base for all RCFIs had grown to 8,029 which include savings and salary accounts customers and borrowers. The total deposit liabilities amounted to L$96.7 million and US$360.0 thousand. The RCFIs had an outstanding loan portfolio of L$6.2 million at the end of 2016 (CBL, 2016).

CHAPTER THREE
LITERATURE REVIEW

3.1 Introduction

In this chapter, the review of literature on the relationship between financial development and economic growth is presented. The review of literature covers both theoretical and empirical literature.

3.2 Theoretical Literature

The debate regarding the relationship between financial sector development and economic growth started with Joseph Schumpeter (1911) who stated that the role of financial intermediation is at the epicenter of economic development. Schumpeter (1911) arguments pointed out to productivity and growth enhancing effects of the services provided by a developed financial sector. He explained how financial transactions take fundamental stage in economic growth. However, he did not use the new terminology of financial development but he, for example, used the bankers. Schumpeter used the term development in place of Economic growth.

He suggested that bankers, through their selection and funding of entrepreneurs, promote innovative activities and spur economic growth. Schumpeter argues that the financial sector promotes capital productivity growth by facilitating trading, mobilizing savings; allocating resources to highly productive investment, and facilitating exchange of goods and services. Schumpeter regards credit creation by banks as the chief source of finance, and according to him, banks mobilize resources from surplus lending units to deficit spending units.

Following the theoretical works of Keynes (1936) who advocated for government interference in credit markets, many governments (in the 1960's and 1970's) tried to generate economic growth through financial repressive policies (fixed interest rates, sectoral credit allocation and inflationary monetary policies). Governments, particularly in developing countries, used various forms of financial repression to preserve financial stability and to protect the public from unexpected losses, but also to generate fiscal resource and to finance their deficits.

However, McKinnon (1973) and Shaw (1973) argued against such financial repressive policies, as they act as disincentives to savings mobilization, which negatively affect long-run economic growth. McKinnon-Shaw models advocated for liberalization of the financial sector to promote higher savings levels to finance investments and accelerate long-run economic growth. According to (McKinnon 1973) liberalization of financial markets allows financial deepening which reflects an increasing use of financial intermediation by savers and investors and the monetization of the economy and allows efficient flow of resources among people and institutions over time. Furthermore, liberalization boosts savings and lessens constraint on capital accumulation and improves allocate efficiency of investment by transferring capital from less productive to more productive sectors.

The McKinnon-Shaw models, however, received some criticisms from the structuralists. Structuralists argued against the McKinnon-Shaw Model and predicted that financial liberalization may even slow down long-term economic growth. Structuralists believe that stable macroeconomic policies stimulate growth and development of the financial sector. In particular, Stiglitz (1989) criticized financial liberalization on the theoretical ground of market failures in financial markets.

King and Levine (1993) emphasized the role played by the financial sector in mobilization of savings and allocation of credit into highly productive investments. He used a number of indicators such as M2/GDP ratio, Commercial bank credit as a ratio of total credit, Commercial bank credit to private sector as a ratio of total credit, Commercial bank credit to private sector as a ratio of GDP. The basic argument is that with the development of the financial sector, savings are intermediated towards productive investment, thereby increasing the rate of capital accumulation.

Antzoulatos (2008) asserted that the degree of asymmetric information reduces with the development of financial system. Developed financial systems offer specialized services and efficient operations that help to reduce information asymmetry in the market. Investors can trust and put more faith in the experienced forecasts of the financial intermediaries in developed financial systems. In this way the value and trust of information raises and more investments can be attracted.

Lewis (1955) posits that economic growth initially facilitates the formation of financial markets and then mature financial markets promote economic growth and assuming a two-way relationship between financial development and economic growth exists. Lewis (1955) and Patrick (1966) concluded that the relationship of supply leads is in the early stage of economic development and that also, causality runs from financial development to economic growth, or if the relationship demand leads prevail in the later stage, the causality is reversed.

Lucas (1988) estimates that economists insist too badly about the importance of finance to Economic growth. He argues that the role of finance to growth has been overemphasized. Lucas' view is strongly supported by Chandavarkar (1992) who suggests that finance is of very little importance and does not respond passively to economic growth. He argues that the importance of growth in the financial sector is more pronounced in developed countries, with the efficiency and orderly functioning of financial markets than in developing countries where there is dysfunction of the financial sphere.

Obviously, there is no consensus from economists regarding the relationship between financial development and economic growth. Therefore, a convenient way to try to resolve these theoretical controversies is the need for empirical study.

3.3 Empirical Literature

Majority of the panel and cross- country studies on financial development and economic growth find that financial development has a positive effect on economic growth.

Eschenbach (2004) points out that the evidence on the relationship between financial development and economic growth submits huge heterogeneity across financial factors, regions, countries, and directions of causality.

An empirical study was conducted on 71 countries for the period 1960 to 1995 by Levine et al. (2000). They used a host of financial development indicators such ratio of liquid liabilities to GDP, ratio of deposit money banks domestic assets to deposit money banks domestic assets plus central bank domestic assets and ratio of credit issued to private enterprises to nominal GDP. The results of their study are supportive of Schumpeter's view that the financial system is a key determinant of economic growth. They advised that legal and accounting reforms, geared

towards improving the financial sector, should be undertaken so as to accelerate economic growth.

Empirical work on financial development and economic growth in southern Africa indicates that the development of the financial sector is pivotal to achieving sustained economic growth, Allen and Ndikumanu (2000). The evidence they found is consistent with the supply leading hypothesis advanced by McKinnon and Shaw (1973).

Khan and Senhadji (2003) employed cross-section data from 159 countries spanning from 1960 to 1999 to investigate the role of financial development to economic growth. They employed two-stage least squares (2SLS) econometric technique and found that financial development has a positive effect on economic growth.

Chistopoulos and Tsionas (2004) used panel analysis to examined the relationship between financial development and economic growth on 10 developing countries. The researchers employed the ratio of total bank deposits liabilities to nominal GDP as a proxy of financial development. Evidence from the empirical results suggests the presence of long-run causality running from financial development to economic growth. The study therefore recommends that financial markets should be improved so as to achieve high level of growth.

A study examining the causal relationship between financial development and economic growth in Morocco for the period 1970-2000 concluded that there exists a short run causality between finance and growth, Fatima (2004). The author employed several measures of financial sector development such as the ratio of liquid liabilities (M3) to GDP, ratio of domestic credit provided by the banking sector to GDP and domestic credit to the private sector to GDP.

Ndebbio (2004) conducted a study on selected Sub-Saharan African countries. The researcher used the ratio of M2 to GDP and growth rate in per capita real money balances as indicators of financial development. It was revealed that growth rate in per capita real money balances had positive impact on real per capita GDP growth.

Khan et al (2005) employed an autoregressive distributed lag approach to investigate the connection between financial development and economic growth in Pakistan over the period 1971-2004. The findings of the study revealed that financial depth exerted positive impact on economic growth in the long run; however, in the short run, the relationship was insignificant.

The study further showed that real deposit rate had a positive impact of on economic growth. The study recommended that policy that promotes development of the financial sector should be promoted.

Sanusi and Salleh (2007) employed the ARDL bounds testing approach to investigate the relationship between financial development and economic growth in Malaysia for the period 1960-2002. The authors used ratio of broad money to GDP, credit provided by the banking system, and deposit money banks to GDP as measures of financial development. The results of the study showed that credit provided by the banking system and ratio of broad money to GDP have positive impact on economic growth in the long run.

Apergis et al. (2007) used data for 15 member-countries of the Organization for Economic Co-operation and Development and 50 Non-Organization for Economic Co-operation and Development countries and performed panel data analysis to investigate the link between financial development and economic growth. the findings of the study found a positive relationship between financial development and economic growth.

Kiran et al (2009) gathered data from 10 countries over the period 1968–2007 and performed panel analysis and Fully Modified OLS (FMOLS) methods to investigate the relationship between financial development and economic growth. The authors used 3 measures of financial development (i.e., ratio of liquid liabilities to GDP, bank credit to GDP, and private sector credit to GDP). The findings of the study pointed out that financial development has a positive and statistically significant effect on economic growth.

Zang and Kim (2007) employed a host of variables (such as credit issued to private enterprises as a share of GDP, the ratio of liquid liabilities to GDP, and the ratio of deposit money bank domestic assets to deposit money banks domestic assets plus central bank domestic assets) to assess the impact on economic growth 74 countries over the period 1961-1995. The authors used panel data analysis and the study found that economic growth precedes financial development.

Guryay et al (2007) performed a Granger causality test to investigate the direction of causality between financial development and economic growth. The study found a small positive effect of financial development on economic growth of Northern Cyprus. In particular, the study revealed that the direction of causality runs from growth to finance.

Esso (2010), in a study on Economic Community of West African States (ECOWAS), use a single financial development indicator that is the ratio of credit to private sector to GDP. It concludes that in most of the countries of ECOWAS financial development leads to growth.

Eita and Jordaan (2007) conducted an empirical study on the financial development and economic growth in Botswana and the findings of the study revealed that financial development leads to economic growth in Botswana. The study concluded that financial deepening and institutional reforms should be enhanced to promote Botswana's economic growth.

Bader and Qarn (2006) conducted a study on the finance-growth nexus in five MENA countries (Algeria, Egypt, Morocco, Syria, and Tunisia). The authors found no evidence of causality between financial development and economic growth in the short-run, whereas long-run causality tests showed that finance follows rather than leads economic growth. Consistent with study findings, the researchers concluded that the financial reforms that most of the countries have undertaken in the past two decades unsuccessful in achieving the desired results of enhancing economic growth.

Mohapi and Motelle (2007) conducted a country specific study to examine the causal relationship between financial development and economic growth in Lesotho. The findings of the study showed that there exists no causality between finance and growth in either direction.

Odhiambo (2007) investigated the causal relationship between financial development and economic growth in South Africa, Kenya, and Tanzania. A demand following view was found to be stronger in South Africa and Kenya, whereas in Tanzania a supply leading response was found to be strong. These findings are also consistent with Patrick's hypothesis (Patrick, 1966), which postulates that the direction of causality between financial development and economic growth changes over the course of development.

Theoretical models and empirical analysis have provided conflicting predictions and implications on the impact of financial development on economic growth. In some countries, finance leads growth while in other countries growth leads finance or the causality is twofold. Another contentious issue in the finance-growth literature is the appropriate indicator for financial development.

This suggests the need to examine which of the views on the finance-growth nexus is applicable to Liberia to provide policymakers a better guide to formulate policies. This study uses domestic credit to the private sector as a percent of GDP as indicator for financial development. The choice of this variable is largely due to data availability, and secondly, due to the fact that is widely used in the empirical literature. Boulila and Trebelisi (2002) describes DCPS (%GDP) as a good proxy of financial sector development in developi ng countries.

CHAPTER FOUR
RESEARCH METHODOLOGY AND DATA

4.1 Introduction

This chapter outlines the methodology used in this study. It presents the theoretical and empirical model, the justification of the model and the choice of variables that are used in this study followed by data sources and expected signs. It concludes with the estimation techniques to be applied to data of the study.

4.2 Model Specification

In order to capture the effect of financial development on economic growth in Liberia, this study adopts the neoclassical growth model used by King and Levine (1993) in an attempt to analyze the relationship between financial development and economic growth over the period of 1960-1989 using data on 80 countries. The design of the model starts with the aggregate production function of the form:

$$Q = F(K\ L) \text{ ----------} \quad (1)$$

Where Q is output, K is capital, and L is labour. The production function exhibits constant returns to scale; in other words, it is homogenous of degree one. The production function can be further written as;

$$\alpha Q = F(\alpha K, \alpha L) \text{----------} \quad (2)$$

From the above equation, if K and L are doubled (say, α=2), total level of output will double as well. With that said, the production function can be rewritten in per capital form as follows;

$$q = Q/L = F(K/L, 1) = F(K/L) = f(k) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Where α=1/L, f'(k)>0 and f''(k)<0; implying that the marginal productivity to increasing the K/L ratio is positive and diminishing. In the context of a Cobb-Douglas production with constant returns to scale and diminishing marginal productivity;

$$Q = AK^{a}L^{1-a} \text{ ----------} \quad (4)$$

Constant returns to scale or homogenous of degree one is guaranteed by making the exponent of K and L sum to unity. The equation can be rewritten in per capital form as;

$$q = \frac{Q}{L} = \frac{AK^{a}L^{1-a}}{L} = \frac{AK^{a}}{L^{a}} = A\left(\frac{K}{L}\right)^{a} = AK^{a} \text{ ----------(5)}$$

The marginal productivity of k can be computed as;

$$MPk = \frac{\partial q}{\partial k} = A\alpha k^{\alpha-1} > \text{ ----------(6)}$$

$$\frac{\partial MPk}{\partial k} = \frac{\partial^2 q}{\partial k^2} = A\alpha(1-\alpha)^{\alpha-2} < 0 \text{ ---------- (7)}$$

The above computation indicates that the production function is concave in nature.

In an attempt to measure growth, King and Levine (1993) modified the above neoclassical growth model. In their modification, growth is decomposed into two components: the rate of capital accumulation and everything else which serves as a determinant of per capita GDP growth. Accordingly, they let y equal per capita GDP growth, k equal real per capita physical capital stock, x equal other determinants of per capita growth, and α is the production function parameter, so that;

$$y = k^{\alpha}x \text{ ----------(8)}$$

where y=GYP (average long-run Per Capita growth), k = GK (growth rate of per capita physical capital stock) and x = EFF (other determinants of per capita growth i.e., human capital accumulation, technology, increases in the number of hours per worker and improvements in the employment of factor input). Rearranging and taking logs of equation (8) yields;

$$GYP = (GK) + EFF \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (9)$$

All variables remained as previously defined. EFF is specifically created as a measure of the residual of per capita GDP growth after accounting for physical capital accumulation.

King and Levine (1993), in their 77 country cross sections study, used several growth indicators (i.e., per capita GDP growth, per capita capital stock growth or productivity growth) averaged over the period 1960-1989. They also used a host of financial development indicators (i.e., (DEPTH, BANK, and PRIVY, PRIVATE), where: BANK = Deposit money bank domestic credit divided by deposit money bank plus central bank domestic credit, PRIVY = Ratio of

claims on the nonfinancial private sector to GDP, PRIVATE = Ratio of claims on the nonfinancial private sector to total domestic credit, PRIVY = Ratio of claims on the nonfinancial private sector to GDP, DEPTH = Ratio of liquid liabilities to GDP. They also used a matrix of conditional variables (i.e., income per capita, education, political stability, fiscal and monetary policy, etc.).

Given that king and Levine (1993) is a cross section study which looked at 77 countries, and this study is country specific – looking at Liberia exclusively, a few modifications have been made on the King and Levine specification to suit the Liberian environment. In particular, the following modifications have been made;

First, unlike the King and Levine study which used the model for a cross-sectional study of 80 countries for 1960-1989, this study is country specific which uses data from 1960-2016.

Second, King and Levine employed four financial development indicators in their study. Due to data unavailability, this study did not employ the same financial development indicators used by King and Levine, instead this study uses Domestic credit to the private sector (as %GDP) as the sole indicator for financial development. Several other studies investigating the finance-growth nexus used this indicator as well. In particular, Boulila and Trebelisi (2002) describes DCPS (%GDP) as a good proxy of financial sector development in developing countries.

Third, whereas king and Levine used three growth indicators such as long-run real per capita growth rates, capital accumulation, and productivity growth, this study employs annual real GDP growth rate as proxy for economic growth.

Fourth, King and Levine (1993) emphasized that there are other macroeconomic determinants associated economic Growth, and as such, this study employs annual population growth, trade openness (%GDP), Gross fixed Capital formation (%GDP), and government spending (%GDP) in the specified model.

Accordingly, the empirical model for this study is specified as;

$$Yt = \beta_{0+} \beta_1 FDt + \beta_2 Xt + Ut \text{ ----------(10)}$$

In the specification shown by equation (10), Y is real output growth, proxied by annual real GDP growth. X is a vector of fundamental control variables of growth as justified by the theory, which includes; Labour Force - proxied by annual growth rate of population growth (PG), Investment - proxied by Gross Fixed Capital Formation as a % of GDP (GFCF), Trade Openness (TO) and government spending (GS). FD represents financial development proxied by Domestic Credit to Private Sector (DCPS) by the financial sector as percentage of GDP. U and *t* represent error term and time respectively.

The general finance-growth relationship can therefore be specified as:

$$RGDPt = \beta_0 + \beta_1 DCPS_t + \beta_2 GFC_t + \beta_3 PG_t + \beta_4 GS_t + \beta_5 TO_t + U_t \quad \text{---------- (11)}$$

Where all variables remain as formerly stated. βo is the intercept term; β1-β5 are the coefficients of the explanatory variables.

4.3 Data Sources and Expected Signs

Annual time-series data covering the period 1960-2016 gathered from the World Development Indicators (WDI) of the World Bank (http://www.worldbank.org) and the Central Bank of Liberia (CBL[4]) were used. The use of time series is rational because, as Jalil and Ma (2008) observe, time series analyses provide an opportunity to study the time pattern.

With the exception of real output and population growth, all the variables were expressed as a percentage of GDP. On account of theoretical and empirical literature reviewed, the variables used for the study are described in Table 4.1.

[4]CBL is the only regulatory and supervisory agency overseeing banking and insurance, which constitute 92 percent of financial sector assets.

Table 4.1: Data sources and Expected signs.

Variables	Empirics	Data Source	Expected sign
RGDP	Nguyen et al (2014), Al Yousif (2002)	WDI	
DCPS	Madichie et al (2014), King and Levi (1993)	WDI/CBL	Positive
GFCF	Mankiw et al. (1992)	WDI/CBL	Positive
PG	Mankiw et al. (1992), Solow (1956).	WDI	Negative/Positive
TO	Harrison (1996), Yanikkaya (2003)	WDI	Positive
GS	Mankiw and scarth (2008)	WDI	Positive

4.3.1 Choice of Variables

Economic growth (RGDP): The study uses real Gross Domestic Product (RGDP) as a measure of economic growth, which therefore becomes the dependant variable. This economic growth indicator is widely used in most studies, for example, Nguyen et al (2014), Jalil and Ma (2008) and Al Yousif (2002). GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products (WDI, 2017)

Domestic credit to private sector as a percent GDP (DCPS): the study uses DCPS as an indicator of financial development. Boulila and Trebelisi (2002) describes DCPS (%GDP) as a good proxy of financial sector development in developing countries. King and Levine (1993), Madichie et al (2014), simwaka et al (2012) and sehrawat & Giri (2015) used this variable and found a positive relationship. Domestic credit to private sector can be defined as financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.

Gross fixed capital formation as a percent GDP (GFCF): GFCF is used in this study as a proxy for Domestic Investment. It is widely used as an indicator for investment and is found to have a positive relationship with economic growth. The study employs total investment (rather than private and government investments) due to data unavailability on each component. Makhema

(2006), however, used gross capital formation as a proxy for total investment in place of private and government investments.

Population growth rate (PG): annual growth of population is used as a proxy of labour force. In the growth literature, it remains a contentious issue as to how the growth of the population affects economic growth. Whereas Solow (1956) postulates that the growth of the population affects the growth of the economy, Mankiw et al (1992) asserts that the growth of the population is expected to improve economic growth. As a result, this study anticipates the annual growth rate of the population to be either negative or positive.

General government final consumption expenditure (GS): Government spending includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security. Mankiw and Scarth (2008) found government spending to be positively related to growth.

Openness of economy (TO): TO is expected to have a positive impact on growth (Yanikkaya, 2003) and Harrison (1996). Trade openness is measured as the sum of exports and imports of goods and services as a share of GDP.

4.4. Estimation Techniques

4.4.1 Cointegration and vector Error Correction Model

The paramount objective of this study is to ascertain the relationship between financial development and economic growth in Liberia and as such, an appropriate procedure is to adopt cointegration analysis and error correction modelling techniques. Consequently, this study uses Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration advanced by Pesaran and Pesaran (1997), Pesaran and Shin (1999) and Pesaran et al (2001) is used in the study. This is because the ARDL approach has some econometric advantages over the Engle-Granger (1987) and maximum likelihood-based approach proffered by Johansen and Juselius (1990) and Johansen (1991) cointegration techniques.

Firstly, the bounds test requires no pre-testing for unit roots of variables employ in the study. That is, the test is conducted regardless of whether the series employ in the study are I(1), I(0), or mutually integrated. Second, the ARDL technique includes sufficient number of lags to capture the data generating process (Laurenceson and Chai, 2003).

Third, it corrects for endogeneity. Pesaran and Shin (1999) suggests that mo sdelling the ARDL with the appropriate lags will correct for both serial correlation and endogeneity problems. Khan el al, (2005) postulates that, in the ARDL approach, all the variables are assumed to be endogenous and the long run and short run parameters of the model are estimated simultaneously.

Fourth, the ARDL has superior small sample properties as compared to the Johansen and Juselius (1990) cointegration test (Pesaran and Shin, 1999). Hence, the approach is considered to be very suitable for analysing the finance-growth nexus in Liberia and has been increasingly used in empirical research in recent years.

The bounds testing approach involves the following steps. Firstly, the null hypothesis of no cointegration relationship is tested against the alternative hypothesis of the existence of cointegrating relationship. The cointegration test is based on the F-statistics or Wald statistics. This statistic has a non-standard distribution. Therefore, Pesaran and Pesaran (1997) and Pesaran et al (2001) have provided two sets of critical values for the cointegration test. The lower critical bound assumes that there is no cointegration among the variables, the reverse is true for the upper bound.

The decision criteria are stated below. If the computed F-statistics is greater than the upper critical bound, then the null hypothesis will be rejected, suggesting that there exists a cointegrating relationship among the variables. If the F-statistic falls below the lower critical bounds value, it implies that there is no cointegration relationship. And when the F-statistic lies within the lower and upper bounds, then the test is inconclusive.

When the cointegrating relationship is established, the long-term and error correction estimates of the ARDL model are obtained. Therefore, a conditional ARDL model of order (*m*, *n*1, *n*2, *n*3, *n*4, n5) is employed to determine the long-term relationship of the variables of interest.
The long-term ARDL model is expressed as:

$$RGDPt = \beta 0 + \sum_{i=1}^{m} \beta 1 i RGDP_{t-i} + \sum_{i=1}^{n1} \delta 1 i \ \mathrm{DCPS}_{t-i} + \sum_{i=1}^{n2} \delta 1 i \ \mathrm{GFC}_{t-i} + \sum_{i=1}^{n3} \delta 1 i \ \mathrm{PG}_{t-i} + \sum_{i=1}^{n4} \delta 1 i \ \mathrm{GS}_{t-i} + \sum_{i=1}^{n5} \delta 1 i \ \mathrm{TO}_{t-i} + \varepsilon_t \quad \ldots\ldots(12)$$

The short-term dynamics will be captured by the error correction model as follows:

$$\Delta RGDPt = \beta 0 + \sum_{i=1}^{m} \beta 1 \Delta RGDP_{t-i} + \sum_{i=1}^{n1} \delta 1 i \Delta DCPS_{t-i} + \sum_{i=1}^{n2} \delta 2 i \Delta GFC_{t-i} + \sum_{i=1}^{n3} \delta 3 i \Delta PG_{t-i} + \sum_{i=1}^{n4} \delta 4 \mathrm{i} \Delta \mathrm{GS}_{t-i} + \sum_{i=1}^{n5} \delta 5 \mathrm{i} \Delta \mathrm{TO}_{t-i} + \theta \mathrm{ECM}_{t-i} + \varepsilon_t \quad \ldots\ldots(13)$$

Where all variables remain as formerly stated; θ measures the speed of adjustment parameter and its coefficient should ordinarily be negative and significant statistically to give an additional confirmation to the presence of a cointegrating link. Finally, ECM is the error correction term.

4.5 ARDL Model Diagnostic Tests

Since a parametric econometric model is described by its parameters, model stability can be equivalent to parameter stability. The Cumulative sum of recursive residual (CUSM) and the Cumulative sum of squared recursive residual (CUSUMSQ) tests are conducted to investigate the model parameters stability. Other tests include serial correlation, Normality and heteroskedasticity.

4.5.1 Normality Test

The normality test is applied on the null hypothesis that the data is normally distributed against the alternate hypothesis that the data does not come from a normal distribution. Basically, the study uses Jarque-Berra test. Here, the test statistic is compared to a chi-squared distribution and normality is rejected if the test statistic is greater than the chi-squared.

4.5.2 Serial Correlation Test

Serial correlation is usually a result of model mis-specification or genuine autocorrelation of the model error term. In the presence of such a phenomenon, ordinary least squares are no longer BLUE (Best Linear Unbiased estimators). In such cases R-squared may be overestimated.

In case we have lagged dependent variable to the right-hand side, OLS estimators are biased and inconsistent. Therefore, Breusch–Godfrey serial correlation LM test is applied on the null hypothesis that there is no serial correlation at lag against the alternative hypothesis that there is serial correlation at lag.

4.5.3 Heteroscedasticity Test

The test of heteroskedasticity is to ensure that the standard errors are not wrong and any inferences made are not misleading. It is assumed that the errors are homoskedastic or their variance is constant. The null hypothesis is the error terms are homoskedastic. Breusch-Pagan-Godfrey test is applied to ensure that this assumption is no longer violated. The p-value of both the F- and $\chi 2$ (LM) versions of the test statistic and the p-value of Scaled explained SS must be higher than 0.05 to reject the null hypothesis of heteroskedasticity.

4.5.4 Parameter Stability

Pesaran and Pesaran (1997) suggest applying the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests proposed by Brown *et al* (1975) to assess the parameter constancy, after estimated the ECM. In general, if CUSUM or CUSUMSQ move out of the critical lines of 5% significance level, the null hypothesis will be rejected, that is, the model is unstable.

CHAPTER FIVE

EMPIRICAL RESULTS AND ANALYSIS

5.1 Introduction

This Chapter presents the empirical estimation and analysis of results of the study. The study focuses on the examination of long run and short run relationship between financial development and economic growth. For this purpose, the study uses the ARDL techniques which requires the following steps: first, check stationary to avoid spurious relationships; second, establish the long run relationship through the F statistics; third, find the long run and short run coefficients; and finally, the model's stability is checked through Brown et al (1975) technique of CUSUM and CUSUMSQ.

5.2 Summary Statistics

Before performing time series analysis, it is imperative to examine the distribution of the series that will be employed in a given model. This is accomplished through the use of summary or descriptive statistics, particularly the use of Jacque-Bera statistics. The null hypothesis that the time series is normally distributed is tested, and if the probability value of the Jacque-Bera statistic is close to zero, one can reject the null hypothesis of normality.

Table 5.1: Summary or Descriptive Statistics

Statistics	RGDP	DCPS	CFCF	PG	GS	TO
mean	.3183557	6.288533	19.43237	2.521029	13.30623	123.6722
Median	2.918717	5.950504	19.45454	2.624503	15.05034	121.6944
Variance	191.3668	35.43174	4.981989	3.96462	65.71761	2972.012
Std	13.83354	5.952457	2.232037	1.991135	8.10664	54.51617
CV	43.45309	.9465573	.1148618	.7898107	.6092364	.4408118
Sum	18.14628	358.4464	1107.645	143.6986	758.4551	7049.315
Max	30.20813	20.4424	26.10365	7.849706	28.12717	311.3553
Min	-51.03086	.1542184	7.499991	-1.8388	-4.382376	34.83072
skewness	-1.437243	.6967676	-1.659408	-.0612255	-.4390006	1.699558
Kurtosis	6.525831	2.461743	18.03885	4.234646	2.61747	6.67
JB stats	49.15	5.3	563.3	.656	2.178	59.57
Prob.	2.1e-11	.0706	5.e-123	.1607	.3365	1.2e-13
Obs.	57	57	57	57	57	57

Table 5.1 shows the summary or descriptive statistics of the variables employed in this study. From the table, only Domestic credit to the private (as % GDP) appears to be non-normally distributed, the rest are distributed normally.

5.3 Correlation Analysis

To cater for multicollinearity or high level of correlation among the explanatory variables employed in the model, correlation analysis is conducted and the results are reported in **Table 5.2.** The numbers are Pearson correlation coefficients, range from -1 to 1. Closer to 1 suggests strong correlation. The correlation matrix in table 5.2 suggests that there is no perfect multicollinearity among the repressors.

Table 5.2: Correlation Matrix

	RGDP	DCPS	GFCF	PG	GS	TO
RGDP	1.0000					
DCPS	0.3118*	1.0000				
GFCF	-0.3107*	0.0377	1.0000			
PG	0.7788*	0.2040	0.1002	1.0000		
GS	0.2616*	0.0533	0.2020	0.0207	1.0000	
TO	0.2327	0.1612	0.0475	0.0847	0.2428	1.0000

5.4 Diagnostic Tests

Tables 5.3, 5.4, and figure 5.1 show various diagnostic tests. The results of the diagnostic tests indicate that the model used in this study is free from serial correlation and heteroskedasticity. Furthermore, the results demonstrate the residuals are normally distributed. Table 5.3 reports the LM test for serial correlation.

Table 5. 3: LM test for Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.121628	Prob. F(2,37)	0.3366
Obs*R-squared	3.086794	Prob. Chi-Square(2)	0.2137

Since the null hypothesis is that the residuals are serially uncorrelated, the chi- square statistics of 0.21 is greater than 5% and thus suggests that we will fail to reject this null; therefore, we conclude that the residuals are serially uncorrelated.

For the test of heteroskedasticity, the null hypothesis is that the residuals are homoscedastic. Accordingly, the chi- square statistics of 0.12, in Table 5.4, is more than 5%, thus it indicates that we fail to reject the null. We, therefore, conclude that the residuals are homoscedastic.

Table 5. 4: Breusch-Pagan-Godfrey Test for Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.656234	Prob. F(14,39)	0.1067
Obs*R-squared	20.13455	Prob. Chi-Square(14)	0.1260
Scaledexplained SS	10.52198	Prob. Chi-Square(14)	0.7231

Finally, the probability value of 0.90, reported in figure 5.1, is greater than 5% and since the null hypothesis is that the residuals are normally distributed, we fail to reject null. Consequently, we conclude that the residuals are normally distributed.

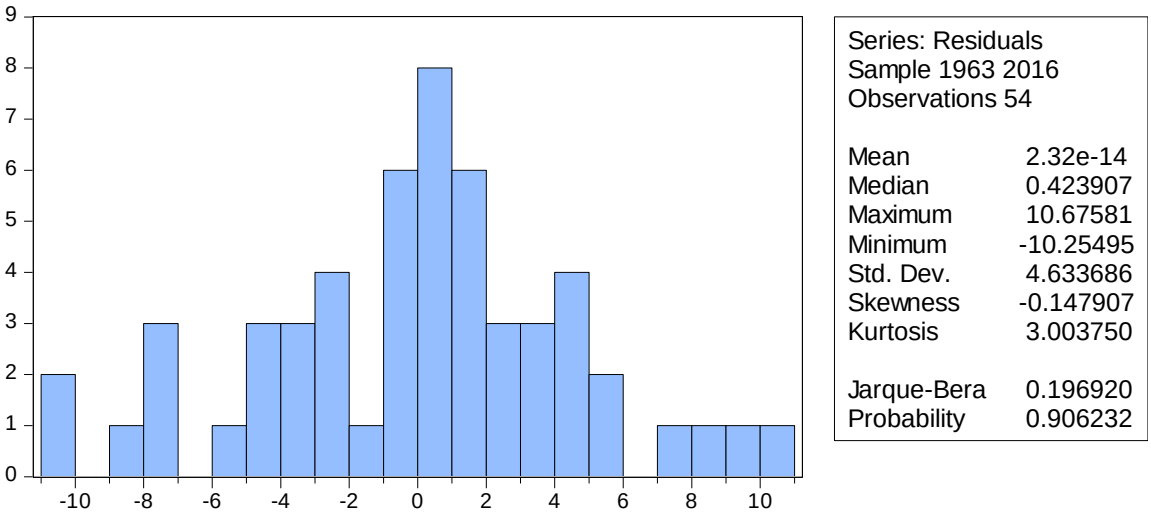


Figure 5. 1: Jarque-Bera test for Normality

5.5 Test for Stationarity

The Augmented Dickey-Fuller (ADF) test was used to examine the stationarity of the variables used in the study. It is imperative that a unit root test is conducted to ensure that the series are not integrated of an order higher than one, which will lead to spurious ARDL results. The Akaike Information Criterion (AIC) are used to determine the optimal number of lags included in the test. The results of the ADF test are shown in Table 5.5.

Table 5. 5: Unit root test using ADF

Variables	Constant	Constant and trend	Decision
	Level		
RGDP	-0.351926**	-0.352039*	Series is stationary
DCPS	-0.056338	-0.046974	Series is not stationary
GFCF	-0.946520***	-1.020433***	Series is stationary
PG	-0.046369**	-0.048746**	Series is stationary
GS	-0.160724	-0.170084	Series is not stationary
TO	-0.271193**	-0.273631**	Series is stationary
	First Difference		
RGDP	-1.308253***	-1.308262***	Series is stationary
DCPS	-1.254811***	-1.297244***	Series is stationary
GFCF	-2.427151***	-2.428938***	Series is stationary
PG	-0.145099***	-0.145182***	Series is stationary
GS	-1.030569***	-1.030508***	Series is stationary
TO	-1.016118***	-1.017095***	Series is stationary

Note: *, ** and *** represent 10%, 5% and 1% significant level.

From Table 5.5, the Augmented Dickey-Fuller method reported that real gross domestic product, gross fixed capital formation (%GDP), Annual population growth and trade openness (%GDP) are stationary at the level, hence integrated of order zero, I (0). Whereas domestic credit to the private sector (%GDP) and government spending (%GDP) were confirmed stationary at the first difference, thus integrated of order one, I (1). The above result, therefore, gives support to the use of ARDL bounds approach to determine the cointegrating relationships among the variables employed in this study.

5.6 Test for Cointegration

The ARDL Bounds test procedure was used in determining long-run relationship among the variables employed in the study. The results are presented in Table 5.6.

Table 5. 6: ARDL bounds test results for cointegration relationship.

F-Statistic	Level of significance	Lower Bound	Upper Bound	Decision
10.40525***	10%	2.08	3	Evidence of cointegration
	5%	2.39	3.38	
	1%	3.06	4.15	

*** represents 1% significant level

The results indicated that the F-statistic is 10.40525 and it turned out to be obviously larger than the 1% upper bound critical value of 4.15. Accordingly, there is a finance-growth cointegration, suggesting that a long-run finance-growth nexus prevails in Liberia. This conclusion appears consistent with that of Simwaka et al. (2012) and Adu et al. (2013).

5.6.1 The Long Run Results

The results for the long run relationship are reported in **Table 5.7.** The study proxied domestic credit to private sector as financial development indicator. It was evident from the results in Table 5.7 that domestic credit to private sector has significant positive influence on the growth rate of the economy in the long run. This implies that 1% increase in the amount of financial resources granted to private enterprises results in 33% rise in economic growth. The positive and statistically significant effect of financial development is supportive of the of the supply leading hypothesis prediction of McKinnon (1973) and Shaw (1973), which states that financial development induces economic growth by channeling scare resources from small savers to large investors. This result corroborates the findings of Esso (2010), a cross- country study which found positive finance-growth correlation in the long-run for Liberia.

Table 5. 7: Estimated ARDL long run coefficients.

Dependent Variable: RGDP		
Variable	Coefficient	Prob.
DCPS	0.332607**	0.0212
GFCF	-2.585216**	0.0160
PG	5.367456***	0.0000
GS	-0.044831	0.7558
TO	-0.017776	0.5138
C	3.752220*	0.0649

***, **, * represent 1%,5%, & 10% significant level

As demonstrated by the results, Trade Openness was found to be statistically insignificant. This is, however, not surprising since the country has become a net importer. This evidence contradicts the classical argument on comparative advantage trade and findings of Yucel (2009) and Yanikkaya (2003) who found a positive relationship between trade openness and growth.

Similarly, in the case of government spending as a percentage of GDP, the coefficient was negative but statistically insignificant. This, perhaps, is due to the fact that, the Liberian government spending is largely composed of recurrent expenditure compared to capital expenditures. This type of expenditure, according to Folster and Henrekson (1998) and Kweka and Morrissey (2000), includes spending on consumption goods and services, welfare and salary payment which reduces economic growth because it crowds out private investment, reduces government savings and constrains development expenditure. This evidence contradicts Mankiw and Scarth (2008) who found a positive relationship between government spending and economic growth.

Surprisingly, gross fixed capital formation as a percentage of GDP exhibited negative and statistically significant long-term effect on the growth of the economy. This can however be explained by the illicit flows and repatriation of profits by foreign companies which has kept

savings strongly and consistently negative. Also, Liberia's business environment remains a constraint on growth with it ranking 174th out of 190 countries on the World Bank's 2017 'Ease of Doing Business' index. The most significant constraints include the availability of electricity, weak contract enforcement and the difficulty in cross-border trade. This result is consistent with the findings of Ahmad and et al (2013) from Pakistan but contradicts (Mankiw et al 1992).

Lastly, population growth has a positive impact on the growth rate of the economy in the long-term. This finding contradicts Mankiw et al (1992) but confirms Solow (1956) who argued that the growth of labor force in the economy signifies increase in the productivity.

5.6.2 The Short Run Results

The results of short-term effects of financial development as well as the control variables on economic growth in Liberia are summarized in Table 5.8.

Table 5. 8: Estimated ARDL short run coefficients and the error correction estimate.

Dependent Variable: RGDP		
Variable	**Coefficient**	**Prob.**
D(DCPS)	0.455711	0.1013
D(GFCF)	-1.717179***	0.0000
D(PG)	-12.414824***	0.0046
D(GS)	0.754454***	0.0001
D(TO)	0.027047	0.2425
CointEq(-1)	-0.923067***	0.0000

Cointeq = GDP -(0.3326*DCPS -2.5852*GFC + 5.3675*PG -0.0448*GS-0.0178*TO + 3.7522)

With respect to the short run relationship, the nexus relative to domestic credit to private sector and growth of the economy was positive but statistically insignificant. The insignificance of financial development in stimulating economic growth in Liberia, in the short run, may be attributed to a lot of reasons.

First, this can however be explained by the lack of collateral security by many individuals which makes it complex for them to secure loans from banks no matter how much banks are willing to lend. Furthermore, it implies that Liberia domestic bank lending is concentrated in sectors (such

as; commerce, trade, construction and real estate) which offers only a limited contribution to economic transformation, compared to limited bank lending to sectors (such as; agriculture and manufacturing) with the potential to increase productivity, create mass employment, and thus spur growth (see **figure 2.2**).

Among the four control variables involved in this study, gross fixed capital formation as a percentage of GDP was found to relate negatively to economic growth as was the case for the long run surprisingly. Given its coefficient of -1.717179, it implies that 1% boost in gross fixed capital formation is matched by approximately 1.7% decrease in economic growth. Profits repatriation by foreign companies and unconducive business environment are the key factors contributing towards this negative relationship.

As demonstrated by the results, population growth has a negative impact on the growth rate of the economy in the short-term. This result corroborates with the findings of Mankiw et al. (1992). Given its coefficient of -12.414824, it implies that 1% boost in population growth is harmonized by about 12.4% decrease in economic growth.

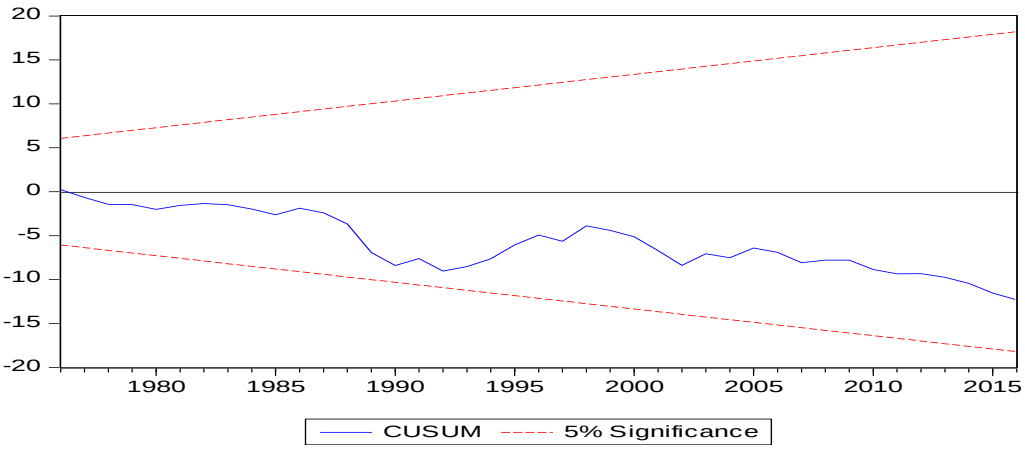
Unlike the long run results, the coefficient of trade openness coefficient is positive in the short run, albeit still statistically insignificant. Again, this could be attributed to the import driven nature of the Liberian economy. The result is not consistent with the classical argument on comparative advantage trade and the findings of Yanikkaya (2003) and Yucel (2009).
Turning all attention on the impact of government spending on economic growth, the result showed a statistically significant positive relationship between government spending and economic growth. In specific terms, 1% increase in government spending in the short-run is associated with 75% increase in economic growth. This finding contradicts the long-run occurrence but confirms the finding of Mankiw and Scarth (2008).

The result of the error correcting model (ECM) indicates an adjustment to the equilibrium state after a shock. The lagged error term coefficient is negative (-0.923067), as required and is strongly significant at 1% level. This serves to further affirm the presence of long-run finance-growth nexus. Again, it suggests that about 92% of distortions created by shocks in the preceding year can be restored in the current year.

5.7 Stability Test

The results as shown in **figures 5.2** clearly indicate that the parameters are stable since the plot of the CUSUM and CUSUMSQ statistics are confined within the 5 per cent critical bounds of parameter stability for the model.

Plot of cumulative sum of recursive residual



Plot of cumulative sum of squares of recursive residuals

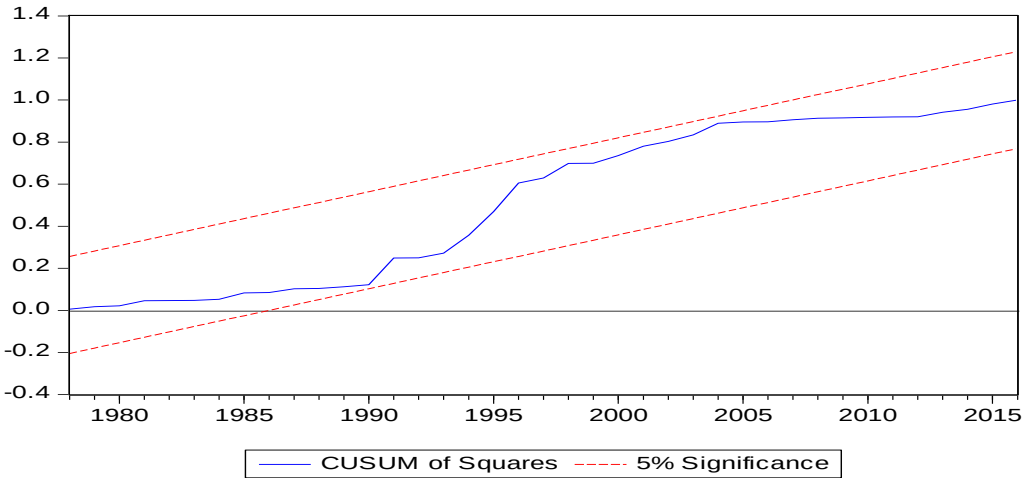


Figure 5. 2: CUSUM and CUSUMSQ Plots for Stability Tests

CHAPTER SIX
CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

In this chapter, the study draws conclusions about the research question and puts forward policy recommendations and suggestions for future research on finance-growth nexus in Liberia.

6.2 Conclusions

This study empirically examined the effect of financial development on economic growth in Liberia over the period 1960 to 2016 using the auto-regressive distributed lag (ARDL) approach to co-integration analysis, controlling for the possible effects of other macroeconomic variables such as annual growth rate of population, Gross Fixed Capital Formation as a % of GDP, Trade Openness and government consumption expenditure.

Prior to implementing the co-integration analysis, the study adopted the Augmented Dickey-Fuller (ADF) test to examine the stationarity properties of the variables. The study found it appropriate to estimate the model using ARDL Bounds test specification as the series were found to be integrated of orders zero and one.

The empirical results confirmed the existence of long run relationship between financial development and economic growth in Liberia. This result supports the 'supply leading hypothesis' which states that financial development induces economic growth by channeling scare resources from small savers to large investors. In the short run, however, the results showed that financial development and economic growth are insignificantly related.

Furthermore, the results showed that gross fixed capital and population growth have long run relationships with economic growth whereas government spending and trade openness were found to be statistically insignificant.

Surprisingly, the results showed that gross fixed capital formation caused a decline in economic growth in the long-run as well as in the short run which does not conform to our a priori expectation. This can however be explained by the illicit flows and repatriation of profits by foreign companies which has kept savings strongly and consistently negative. Also, Liberia's business environment is constrained by the availability of electricity, weak contract enforcement and the difficulty in cross-border trade.

Finally, the diagnostic tests of the estimated ARDL model suggest that the model passes the test for serial correlation, non-normality, and heteroskedasticity. The plots of CUSUM and CUSUMSQ stability tests indicate that all the coefficients of the estimated model over the study period are stable.

6.3 Policy Recommendations

Given the empirical findings of this study, there are plethora of policy implications and recommendations that can be suggested to improve the process of economic growth in Liberia. In particular, the findings of the study showed that financial sector is crucial for the growth of the economy in the long run. Therefore, policies that promote financial development and intermediation should be promoted.

First, there is a need for reforms of the financial sector, legal and regulatory framework, regulation and supervision of banks and nonbank institutions, including microfinance, as well as for interbank payments and digital finance. Additionally, processes and institutions that facilitate a sound and competitive financial market must be improved for efficient allocation of credit and insurance, collection of loans, and secure and efficient payment services based on transaction accounts, as well as the protection of depositors and safety of the financial system. These reforms would contribute to improving the quality and affordability of financial services available to consumers and business of all sizes, particularly SMEs and to low-income households and thus spur growth.

Secondly, in order to avert the negative relationship between gross fixed capital and economic growth, this study recommends that government makes it mandatory for all companies operating in Liberia to plough back a good fraction of their annual profits into the economy. In particular, government should put a ceiling on the total amount of money that can be taken out of the country within a given period of time. Also, there is a need for improvement in contract enforcement, security, and infrastructure development (roads and electricity, say). This will in turn reduce the drudgeries associated with setting up a business, create a conducive business environment that would enable businesses to thrive and thus contribute significantly towards economic growth.

Lastly, government should invest in human resources and capacity building given the long run significance of population growth to economic Growth. This would enhance growth and bring about economic transformation.

6.4 Limitations and Areas of Further Study

Owing to the fact that this study used only one measure for financial development, and yet most Liberian studies have not examined the causal dimension of the finance-growth relationship, succeeding studies should employ other indicators for financial development to particularly investigate the finance-growth causal direction dimension in Liberia. In particular, further studies should include other indicators of financial development used in the literature such as domestic deposit, broad money, number of bank branches and so on as proxies of financial development. This might provide better results about the relationship between financial development and economic growth. Due to unavailability of data, the variables named above could not be included in this study. In spite of these limitations, this study makes a significant contribution to the finance-growth discourse.

LIST OF REFERENCES

Abu-Bader, S. and Abu-Qarn, A., (2006) '*Financial development and economic growth nexus: Time series evidence from middle eastern and north African countries'*, *Munich Personal RePEc Archive (MPRA)* Paper 972, University Library of Munich, Germany.

Adu, G., Marbuah, G. and Mensah, J.T. (2013) *Financial Development and Economic Growth in Ghana: Does the Measure of Financial Development Matter?* Review of Development Finance, 3, 192-203.

Adusei, M. (2014*) Does Economic Growth Promote Financial Development?* Research in Applied Economics, 6, 209-220. https://doi.org/10.5296/rae.v6i2.5106

Ahmad A, Ahmad N., and Ali S. (2013) *Exchange Rate and Economic Growth in Pakistan*, Journal of Basic and scientific Research.

Al-Yousif, Y.K. (2002) *Financial Development and Economic Growth: Another Look at the Evidence from Developing Countries.* Review of Financial Economics, 11, 131-150. https://doi.org/10.1016/S1058-3300(02)00039-3

Ang, J.B. and Warwick J. McKibbin (2007*). Financial liberalization, financial sector development and growth: Evidence from Malaysia*. Journal of Development Economics, 84 (2207), 215–233.

Antzoulatos (2008). *Financial Development and Asymmetric information*. Department of Banking and Financial Management, University of Piraeus.

Apergis, N., I., Filippidis and C. Economidou (2007) 'Financial deepening and economic growth linkages: A panel data analysis', *Review of World Economics,* 143, 179-198.

Arestis P., Demetriades, Panicos O., and K. B. Luintel (2001). "*The Role of Financial Development in Growth and Investment.* Journal of Money, Credit, and Banking, 33 (1), 16- 41.

Browne et al. (1975). *Techniques for testing constancy of regression relations over time*. Journal of Royal statistics society. Series B, 37,149-163.

Bencivenga, V. R. And Smith, B. D, (1991). Financial Intermediation and Endogenous Growth. Review of Economic Studies, 58 (194), 195 – 209.

Central Bank of Liberia (2014-2016) 'Annual Reports'. Monrovia, Liberia.

Chandavarkar, A. (1992). *Of finance and development: Neglected and unsettled questions*. World Dev, 22,133–142.

Christopoulos, D.R. and E.G Tsianos, (2004). *Financial development and economic growth: evidence from panel unit root and Co-integration test.* Journal of development economics, 73, 55-74.

Demetriades and Law (2004*). Finance, Institutions, and Economic Growth*. Department of Economics, University of Leicester.

Demetriades, Panicos O., and Khaled A. Hussein (1996). Does Financial Development Cause Economic Growth? Time-Series Evidence from Sixteen Countries. Journal of Development Economics, 51 (2), 387-411.

Demetriades, Panicos O., and Kul B. Luintel (1996). *Financial Development, Economic Growth and Banking Sector Controls Evidence from India.* The Economic Journal, 106, 359-374.

Engle, R. and Granger, C. (1987) *'Cointegration and error correction representation: estimation and testing'*, Econometrica**,** 55, 251-276.

Eschenbach, F. (2004) 'Finance and growth: *A survey of the theoretical and empirical literature", Tinbergen Institute Discussion Paper*, 039/2

Esso, L.J. (2010) Cointegrating and Causal Relationship between Financial Development and Economic Growth in ECOWAS Countries. Journal of Economics and International Finance, 2, 036-048.

Fatima A. M. (2004) 'Does financial development cause economic growth? *An empirical investigation drawing on the Moroccan experience'*, *Working Papers 000295*, Lancaster University Management School, Economics Department.

Folster, Stefan and Magnus Henrekson (1998) "Growth and the Public Sector: A Critique of the Critics." European Journal of Political Economy, Vol.15, No.2.

Goldsmith, R. W. (1969). Financial Structure and Development', New Haven, CT: Yale U.

Goswami, G.G. and Hossain, M.Z. (2013) *Testing Black Market vs. Official PPP: A Pooled Mean Group Estimation Approach.* The Empirical Economics Letters, 12, 1291-1300.

Greenwood, Jeremy, and Boyan Jovanovic (1990*). Financial Development, Growth and the Distribution of Income.* Journal of Political Economy, 98 (5), 1076-1107

Gries et al. (2009). *Linkages between Financial Deepening, Trade Openness and Economic Development: Causality Evidence from South Saharan Africa*. World Development Vol. 37, No. 12, pp. 1848-1860

Harrison, A. (1996) *Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries.* Journal of development Economics, 48, 419-447.

Hicks, J. R. (1969). *A Theory of Economic History*. Oxford: Clarendon Press.

Ireland, P. (1994). *Money and Growth*: An Alternative Approach. American Economic Review, March, 47-65.

Jalil, A. and Ma, Y. (2008), *Financial Development and Economic: Time Series Evidence from Pakistan and China,* Journal of Economic Cooperation, 29(2), 29-68

Johansen, S. (1991) '*Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models', Econometrica*, 59, 1551-1580.

Johansen, S. and Juselius, K. (1990) *'Maximum likelihood estimation and inference on cointegration with applications to the demand for money',* Oxford Bulletin of Economics and Statistics**,** 52, 169-210.

Kiran, B, Yavus, N. C and Guris, B. (2009) '*Financial development and economic growth: Apanel data analysis of emerging countries',* International Research Journal of Finance and Economics, 30, 1450-2887.

Khan, S.M. and Senhadji, A.S. (2003) 'Financial development and economic growth: *A review and new evidence", Journal of African Economies*, 12, AERC Supplement 2: ii89ii110.

Khan, A. and Senhadji, A. S. (2000). *Financial Development and Economic Growth: An Overview*. International Monetary Fund, Washington,D.C. (IMF Working Paper 00/209).

Khan. A., Qayyum, A., and Sheihk, S., (2005). *Financial Development and Economic Growth: The case of Pakistan.* The Pakistan Development Review 44, 819-837.

King, R.G., and R. Levine (1993a). *Finance and Growth: Schumpeter Might be Right.* Quarterly Journal of Economics 108, 717-737.

Kweka, Joseph P., and Oliver Morrissey (2000) *"Government Spending and Economic Growth in Tanzania, 1965-1996," Center for Research in Economic Development and International Trade,* University of Nottingham, CREDIT Research Paper No. 00/6.

Laurenceson, J. and Chai, J. C.H., (2003) *Financial reform and economic development in China,* Cheltenham: Edward Elgar.

Levine, R (1992). *Financial intermediary services and growth*. Journal of Japanese and international Economic, 6, 383-405.

Levine, R.; Loayza, N.; Beck, T (2000). *Financial intermediation and growth: Causality and causes*. J. Monet. Econ.

Levine, R and Zervos, S (1998). *Stock markets, banks and economic growth. American Economic Review*, 88 (3), 537-558.

Lewis, R.E. (1955). *The Theory of Economic Growth;* George Allen and Unwin: London, UK

Liu and Hsu (2006). *The Role of financial Development in Economic Growth: The Experiences of Taiwan, Korea and Japan.* Journal of Asian Economic.

Luintel, Kul B., and Mosahid Khan (1999). *A Quantitative Reassessment of the Finance-Growth Nexus: Evidence from a Multivariate VAR.* Journal of Development Economics, 60, 381-405.

Lucas, R.E. (1988), *On the Mechanics of Economic Development,* Journal of Monetary Economics, 22(1), 3-42.

Madichie, C., Maduka, A., Oguanobi, C. and Ekesiobi, C., (2014) *Financial Development and Economic Growth in Nigeria: A Reconsideration of Empirical Evidence*. Journal of Economics and Sustainable Development, 5, 199-208

Makhema, Puseletso (2006) "*The Impact of Government Expenditure on Economic Growth in Lesotho,"* Department of Economics, University of Zimbabwe

Mankiw, N.G. and Scarth, W. (2008) *Macroeconomics.* Third Canadian Edition, Worth Publishers, New York.

Mankiw, N.G., Romer, D. and Weil, D.N. (1992) *A Contribution to the Empirics of Economic Growth.* The Quarterly Journal of Economics, 17, 407-437. https://doi.org/10.2307/2118477.

McKinnon R. (1973). *Money and Capital in Economic Development. Brooking Institution.*Washington, DC, USA.

Mohapi and Monteli (2007). *Finance-Growth Nexus in Lesotho: Causality revelations from Alternative proxies.* J. Stud, Econ. Econometrics, 31(3): 43-59.

Ndebbio, J. E. U. (2004) 'Financial deepening, economic growth and development: *Evidence from selected sub-Saharan African countries', African Economic Research Consortium (AERC) Research Paper* 142.

Nguyen, Q.N., Pham, T.M. and Bhar, R. (2014) *Foreign Direct Investment and Economic Growth during Financial Liberalization Episodes*. International Journal of Economics and Finance, 6, 91. https://doi.org/10.5539/ijef.v6n8p91

Odhiambo N.M. (2007*). Supply-leading versus Demand-following Hypothesis*: Empirical Evidence from Three SSA Countries. African Development review, 19 (2), 257-280.

Patrick, Hugh T. (1966). *Financial Development and Economic Growth in Underdeveloped Countries.* Economic Development and Cultural Change, 14, 174189.

Presaran MH and Pesaran B. (1997). *Working with Microfit 4.0: Interactive Econometric Analysis*. Oxford, Oxford University press.

Pesaran, M.H., Shin, Y. and Smith, R.P. (1999) *Pooled Mean Group Estimation of Dynamic Heterogeneous Panels*. Journal of the American Statistical Association, 94, 621-634. https://doi.org/10.1080/01621459.1999.10474156

Pesaran, M.H., Shin, Y.C. and Smith, R. (2001) *Bound Testing Approaches to the Analysis of Level Relationships.* Journal of Applied Econometrics, 16, 289-326. https://doi.org/10.1002/jae.616

Rioja, F., Valev, N., (2004). *Finance and the Sources of Growth at various stages of Economic Development*. Economic Inquiry, 42 (1), 127– 140.

Rioja, F. and Valev, N. (2004). *Does one size Fit All? A Re-examination of the Finance and Growth Relationship*. Journal of Development Economics, 74,429-47.

Robinson, J. (1952), "*The Rate of Interest and Other Essays",* London, MacMillan.

Sehrawat, M. and Giri, A.K. (2015) *Financial Development and Economic Growth: Empirical Evidence from India.* Studies in Economics and Finance, 32, 340-356. https://doi.org/10.1108/SEF-10-2013-0152

Schumpeter, J. A. (1911) *The Theory of Economic Development, An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Translation 1934, Cambridge MA, Harvard University Press. Second Printing 1936; third printing 1949.

Shaw, E.S. (1973) *Financial Deepening in Economic Development.* Oxford University Press, London.

Simwaka, K., Munthali, T., Chuimia, A. and Kabanga, G. (2012) *Financial Development and Economic Growth in Malawi*: An Empirical Analysis. Banks and Bank System, 7, 85-96.

Solow, R. M. (1956*). A contribution to the theory of economic growth*. The quarterly journal of economics, 70(1), 65-94.

Radelet, S. "*Reviving Economic Growth in Liberia*." Center for Global Development, Working Paper 2007. f 133 V pp. 1-21. Http://www.cgdev.org.

Sanusi, N. A and Sallah, N. H. M. (2007) *"Financial development and economic growth in Malaysia: An application of ARDL approach'*, [Online], available: *http://www. ibacnet.org/bai2007/proceedings/Papers/2007bai7443.doc.*

Suleiman Abu-Bader and Aamer S. Abu-Qarn (2007). *Financial Development and Economic Growth: Empirical Evidence from MENA Countries*. Online at http://mpra.ub.uni-muenchen.de/972/ Paper No. 972. Accessed 20th April 2008

Yanikkaya, H. (2003) *Trade Openness and Economic Growth: A Cross-Country Empirical Investigation.* Journal of Development Economics, 72, 57-89. https://doi.org/10.1016/S0304-3878(03)00068-3

Yucel, F. (2009) *Causal Relationships between Financial Development, Trade Openness and Economic Growth:* The Case of Turkey. Journal of Social Sciences, 5,33-42. https://doi.org/10.3844/jssp.2009.33.42

Zang, H. and Kim, Y. C. (2007) '*Does financial development precede growth? Robinson and Lucas might be right', Applied Economic Letters*, 14, 15-19

APPENDICES

Appendix I: Data used in the Regression Analysis

Appendix 1 contains growth rate data used in the regression analysis of the study. The data spans from 1960 to 2016 as seen below.

Appendix I: Data used in the Regression Analysis

YEAR	**(GDP)** GDP growth (annual %)	**(DCPS)** Domestic credit provided by financial sector (% of GDP)	**(PG)** Population growth (annual %)	**(GS)** General government final consumption expenditure (% of GDP)	**(GFCF)** Gross Fixed capital formation (% of GDP)	**(TO)** Trade (% of GDP)
1960	2.292518	6.740021	2.153772	8.556628	18.12475	84.14893
1961	2.439985	7.182979	2.17843	12.01604	18.18175	86.61332
1962	1.344606	8.188185	2.202151	12.71749	18.23478	108.9847
1963	2.274461	10.15634	2.23126	15.3324	18.28391	95.54032
1964	5.151961	9.499879	2.267866	15.6215	18.32916	117.2526
1965	4.793786	7.959058	2.311314	15.52817	18.37161	112.8409
1966	7.702656	7.297323	2.353777	16.1581	18.30208	121.3289
1967	6.745791	8.265514	2.397492	15.86059	18.37605	135.5429
1968	4.768872	8.689018	2.447093	15.3529	18.5173	133.3354
1969	7.288473	9.578065	2.504304	14.75754	18.65409	136.0103
1970	6.663193	10.9248	2.566453	13.95854	18.7484	123.5222
1971	4.90483	11.34937	2.624503	15.54709	18.79444	124.7573
1972	4.140496	12.86234	2.680908	15.05034	18.81431	124.6951
1973	-2.25598	14.02751	2.741593	14.47147	18.82387	147.5056
1974	4.7532	0.629137	2.808178	13.24558	18.83441	151.821

1975	-3.46859	0.286231	2.875448	12.67424	18.85214	134.2915
1976	5.310734	0.300012	2.868411	14.96625	18.88114	153.0648
1977	1.587985	0.349507	2.840863	17.83033	18.92318	145.7481
1978	4.816221	0.396824	2.908035	19.37983	18.97834	146.1993
1979	3.26482	0.386917	3.092124	19.23672	19.04552	140.1603
1980	-4.09836	0.223452	3.307423	21.29373	19.12319	143.6157
1981	-2.13675	0.232698	3.59613	24.92574	19.21457	135.7212
1982	-2.43294	0.186822	3.730104	28.12717	19.31158	127.0932
1983	-1.89685	0.186403	3.437587	24.77608	20.5917	120.6012
1984	-2.10732	0.189839	2.63638	22.03946	19.63943	105.7187
1985	-0.84332	0.19616	1.538116	27.01763	18.99548	102.432
1986	-1.6786	0.190245	0.422266	21.99855	18.82376	99.05293
1987	-1.0016	0.198972	-0.49216	24.38877	19.01039	135.3954
1988	-2.0419	0.154218	-1.19066	24.70512	19.36906	133.7091
1989	-26.6684	0.337748	-1.56242	25.21883	19.65582	131.5385
1990	-51.0309	0.402112	-1.62193	-4.38238	19.88035	34.83072
1991	-14.2252	0.597685	-1.77828	-3.92828	20.04706	51.58074
1992	-35.0857	1.472504	-1.8388	-2.93617	20.17447	65.71274
1993	-32.9754	1.708134	-1.11764	-1.67718	20.26318	77.34359
1994	-21.7623	3.627574	0.629784	-0.4861	20.31954	87.11541
1995	-4.26621	2.620327	2.96603	0.711953	20.3492	96.70098
1996	12.12121	6.342016	5.521044	1.577222	20.35708	105.3215
1997	10.62798	0.552813	7.357292	2.806188	20.3439	80.77053
1998	30.20813	7.692165	7.849706	4.00851	20.25636	50.13904
1999	21.74145	4.866435	6.944544	5.276211	20.1917	56.22454
2000	28.61593	3.060847	5.340402	7.532294	7.499991	70.31277
2001	2.918717	3.464842	3.629271	6.73309	26.10365	65.39119
2002	3.762765	3.357665	2.369819	3.541602	26.10365	73.13582
2003	-30.1452	4.338567	1.72748	4.303798	23.79808	71.92154

2004	2.620605	5.950504	1.912799	10.87636	21.2766	290.4993
2005	5.281976	6.191959	2.635154	11.19589	19.45455	270.3636
2006	8.043162	8.159431	3.453916	9.347483	19.45455	277.1391
2007	9.534893	9.65068	3.980743	13.61027	19.45455	311.3553
2008	7.146939	12.15933	4.182956	18.32572	19.5016	179.1209
2009	5.300099	12.04612	3.974959	15.75505	19.45455	110.2116
2010	6.099945	14.43689	3.521062	14.23712	19.45454	111.7744
2011	8.199998	16.06732	3.044325	15.1928	19.45454	116.2678
2012	7.994451	15.89327	2.700107	15.45256	19.45454	122.1665
2013	8.703875	19.46623	2.473669	19.15232	19.45454	130.9935
2014	0.701142	18.32079	2.40753	16.66786	19.4932	136.9684
2015	0	20.4424	2.449608	16.86332	20.15733	126.0177
2016	-1.6	18.3922	2.506363	15.94479	20.08567	121.6944

Appendix II: E-views 9 (Unedited) Results of ARDL bounds Test

ARDL Bounds Test

Date: 03/27/18 Time: 10:47

Sample: 4 57

Included observations: 54

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	10.40525	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Test Equation:

Dependent Variable: D(GDP)

Method: Least Squares

Date: 03/27/18 Time: 10:47

Sample: 4 57

Included observations: 54

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GFC)	-1.659211	0.425117	-3.902955	0.0004
D(GFC(-1))	0.040797	0.682987	0.059733	0.9527
D(GFC(-2))	-1.318639	0.478592	-2.755243	0.0089

D(PG)	-11.91631	5.171539	-2.304210	0.0266
D(PG(-1))	26.83601	9.108117	2.946384	0.0054
D(PG(-2))	-17.79714	6.316476	-2.817575	0.0076
D(GS)	0.784243	0.218130	3.595306	0.0009
D(TO)	0.024390	0.034576	0.705397	0.4848
C	32.50258	19.70625	1.649353	0.1071
DCPS(-1)	0.258470	0.142777	1.810303	0.0780
GFC(-1)	-2.250894	1.053780	-2.136018	0.0390
PG(-1)	4.943496	0.915159	5.401791	0.0000
GS(-1)	-0.042087	0.136126	-0.309175	0.7588
TO(-1)	-0.015644	0.024985	-0.626149	0.5349
GDP(-1)	-0.917726	0.119005	-7.711634	0.0000

R-squared	0.841132	Mean dependent var	-0.054530
Adjusted R squared	0.784102	S.D. dependent var	11.92658
S.E. of regression	5.541664	Akaike info criterion	6.492600
Sum squared resid	1197.691	Schwarz criterion	7.045095
Log likelihood	-160.3002	Hannan-Quinn criter.	6.705676
F-statistic	14.74903	Durbin-Watson stat	1.900870
Prob(F-statistic)	0.000000		

Appendix III: E-views 9 (unedited) ARDL long run and short run results

ARDL Cointegrating And Long Run Form
Dependent Variable: GDP
Selected Model: ARDL(1, 0, 3, 3, 1, 1)
Date: 01/15/18 Time: 18:30
Sample: 1960 2016
Included observations: 54

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DCPS)	0.455711	0.271523	1.678349	0.1013
D(GFC)	-1.717179	0.283589	-6.055173	0.0000
D(GFC(-1))	0.102364	0.310287	0.329899	0.7432
D(GFC(-2))	-1.294237	0.274968	-4.706860	0.0000
D(PG)	-12.414824	4.132727	-3.004027	0.0046
D(PG(-1))	27.567544	6.983831	3.947339	0.0003
D(PG(-2))	-18.163985	4.311195	-4.213214	0.0001
D(GS)	0.754454	0.179022	4.214304	0.0001
D(TO)	0.027047	0.022789	1.186800	0.2425
CointEq(-1)	-0.923067	0.098503	-9.370922	0.0000

Cointeq = GDP - (0.3326*DCPS -2.5852*GFC + 5.3675*PG -0.0448*GS
-0.0178*TO + 3.7522)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCPS	0.332607	0.138531	2.400955	0.0212
GFC	-2.585216	1.026583	-2.518273	0.0160
PG	5.367456	0.720631	7.448277	0.0000
GS	-0.044831	0.143118	-0.313245	0.7558
TO	-0.017776	0.026977	-0.658941	0.5138
C	3.752220	19.875364	1.899448	0.0649

Appendix IV: EVIEWS (Unedited) results of Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.656234	Prob. F(14,39)	0.1067
Obs*R-squared	20.13455	Prob. Chi-Square(14)	0.1260
Scaled explained SS	10.52198	Prob. Chi-Square(14)	0.7231

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/15/18 Time: 18:06
Sample: 1963 2016
Included observations: 54

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-51.66214	98.02073	-0.527053	0.6011
GDP(-1)	1.525365	0.595222	2.562683	0.0144
DCPS	-1.484916	0.677358	-2.192218	0.0344
GFC	0.819941	2.117659	0.387192	0.7007
GFC(-1)	2.185440	2.038684	1.071986	0.2903
GFC(-2)	0.704897	1.935345	0.364223	0.7177
GFC(-3)	2.941501	2.399213	1.226027	0.2275
PG	-23.76506	25.97417	-0.914950	0.3658
PG(-1)	58.96919	70.80514	0.832838	0.4100
PG(-2)	-59.18125	76.04268	-0.778264	0.4411
PG(-3)	10.87812	31.61729	0.344056	0.7327
GS	1.530800	1.090103	1.404271	0.1682
GS(-1)	-0.401600	1.118864	-0.358935	0.7216
TO	-0.086397	0.173127	-0.499035	0.6206
TO(-1)	-0.151610	0.132830	-1.141381	0.2607

R-squared	0.372862	Mean dependent var	21.07344
Adjusted R-squared	0.147736	S.D. dependent var	30.11037
S.E. of regression	27.79734	Akaike info criterion	9.717891
Sum squared resid	30135.00	Schwarz criterion	10.27039
Log likelihood	-247.3831	Hannan-Quinn criter.	9.930967
F-statistic	1.656234	Durbin-Watson stat	2.234992
Prob(F-statistic)	0.106747		

Appendix V: EVIEWS (Unedited) results of Breusch-Godfrey Serial Correlation LM Test:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.121628	Prob. F(2,37)	0.3366
Obs*R-squared	3.086794	Prob. Chi-Square(2)	0.2137

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 01/15/18 Time: 18:13
Sample: 1963 2016
Included observations: 54
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	-0.146776	0.178486	-0.822339	0.4162
DCPS	0.015500	0.133995	0.115677	0.9085
GFC	0.218892	0.436311	0.501689	0.6189
GFC(-1)	-0.072404	0.417976	-0.173225	0.8634
GFC(-2)	-0.015990	0.375127	-0.042624	0.9662
GFC(-3)	-0.077790	0.480592	-0.161863	0.8723
PG	0.902480	5.268274	0.171305	0.8649
PG(-1)	-2.260529	14.28034	-0.158297	0.8751
PG(-2)	3.175383	15.46463	0.205332	0.8384
PG(-3)	-1.049884	6.329137	-0.165881	0.8692
GS	0.062174	0.224328	0.277156	0.7832
GS(-1)	-0.035346	0.229909	-0.153740	0.8787
TO	-0.008563	0.034026	-0.251652	0.8027
TO(-1)	0.012786	0.028151	0.454196	0.6523
C	-3.986625	19.25376	-0.207057	0.8371
RESID(-1)	0.215936	0.258715	0.834646	0.4093
RESID(-2)	0.260858	0.189962	1.373209	0.1780

R-squared	0.057163	Mean dependent var	2.32E-14
Adjusted R-squared	-0.350551	S.D. dependent var	4.633686
S.E. of regression	5.384955	Akaike info criterion	6.456658
Sum squared resid	1072.916	Schwarz criterion	7.082820
Log likelihood	-157.3298	Hannan-Quinn criter.	6.698144
F-statistic	0.140204	Durbin-Watson stat	1.955498
Prob(F-statistic)	0.999940		