

**FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN UGANDA
(1985-2015)**

BY

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DECLARATION

I **Ikram Dahir Jama** declare that this thesis entitled financial development and economic growth in Uganda from 1985-2015 is the result of my own research except as cited in the references. The thesis has not been accepted nor submitted for any another degree.

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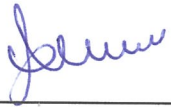
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APPROVAL

I confirm that work reported in this thesis was carried out by the candidate under my supervision.

Supervisor's Name

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Signature 

Date: 25-04-2019

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LIST OF ACRONYMS

ARDL.....	Autoregressive Distributed Lag
BoU.....	Bank of Uganda
CMA.....	Capital Markets Authority
ERP.....	Economic Recovery Program
ESAP.....	Economic Structural Adjustment Program.
FFS.....	Financial System
GDP.....	Gross Domestic Product
EGARCH.....	Engle-Generalized Autoregressive Conditional Heteroscedasticity Model
OLS.....	Ordinary Least Square Simple Regression
UK.....	United Kingdom
UCB.....	Uganda Commercial Bank
VAR.....	Vector Autoregressive Models

ABSTRACT

The debate on the long-run relationship between financial development and economic growth has been comprehensively growing since 1980s in theoretical and empirical literature. The existing literature provides conflicting views of this relationship. For this reason, the purpose of this study is therefore to empirically investigate the direction of causality between finance and growth in the context of Uganda using World Development Indicators (WDI) data from 1985-2015. This study adopts the neoclassical growth model in the analysis of the relationship between financial development and economic growth. The study also used modern multivariate cointegration technique. The study results reveal the supply leading hypothesis to hold for the case of Uganda. The study results show that financial development has stimulated economic growth that the economy has been experiencing in the past decade. The results support the McKinnon-Shaw hypothesis, which suggests that removal of distortions in the financial sector stimulates economic growth. In Uganda, there have been financial sector reforms since 1992. These factors help to explain the positive relationship between financial development and economic growth in the country. The study also uses a dummy variable to examine the effect of financial sector reforms. The coefficient of the dummy variable is positive and significant, implying that the changes induced by the liberalization of the economy had a positive impact on real economic growth in Uganda. The results indicate that a number of other policy reforms which have been implemented largely fiscal and trade policy reforms have been equally responsible for the impressive growth rates. This therefore implies that financial sector development must be supplemented with other policies aimed at removing some structural bottlenecks that characterize developing economies, Uganda in particular. The results have great relevance in the monetary and overall policy formulation in Uganda. The contribution to knowledge is that as the causality between private credit by deposit money bank and other financial institutions to the GDP growth rate have long-run relationship in which the both variables are supplementary to each other; it is advisable for the decision makers of the country to exert an effort to enhance both variables for the benefit of the community at large.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background of the study and the description of the problem. It shows the objectives for which the study was conducted, introduces the research questions and highlights the scope and significance of the study.

1.1 Background to the study

1.1.1 Historical Perspective

Globally, transitional Adjustment Period set the stage for the reforms during 1992-2010. In 2011, most governments adopted the Economic Recovery Program (ERP), which was designed mainly to restore macroeconomic stability (Kilimani, 2011). A key target of the ERP was controlling inflation by restricting the monetary growth largely associated with the monetization of budget deficits. In 2011, the government of Ukraine introduced a new currency in order to reduce the excessive liquidity and generate additional tax revenue. Other reforms were on public expenditures and revenues, pricing and marketing policies, and the rehabilitation of industries. However, the coffee prices fell and the targets on revenue could not be achieved.

In Africa, the early post-independence era was relatively stable and gave hope for a prosperous future in most countries across the continent. During this period, most economies such as Nigeria and Ethiopia, grew steadily, as much as 10.7 percent in 1969. Government intervention was deemed necessary to ensure that the financial sector played a supportive role in the development process. In South Africa, interest rate controls and public sector banks were established; the government also purchased shares in the foreign banks, and established a variety of administered lending programs.

The early post-independence era in Uganda was relatively stable and gave hope for a thriving future in the state. During this period, the economy grew steadily, as much as 10.7 percent in 1969. After Uganda achieved independence on October 9, 1962, the government employed interventionist policies that contributed to the nationalization of many initiatives in finance and manufacture. Government interference was deemed necessary to assure that the financial sector played a supportive role in the growth process.

The second period begun with the ousting of President Milton Obote by General Idi Amin Dada in a coup de tatin 1971. The coup led to economic, social and political instability. It is estimated that real GDP fell by 38percent during this period (Brownbridge, 2011). The sectors most affected were agriculture and trade. There was a significant reduction in coffee production because of the acute security problems and the unattractive prices paid to farmers. Trade was affected by government takeovers and uncertainties in the private sector. The country was also deprived of skilled personnel as a result of the expulsion of the Ugandan-Asians in the early 1970s and the liberation war that followed in the late 1970s and the 1980s.

Financial Sector Period was characterized by comprehensive financial sector reforms. These reforms were implemented as part of the stabilization and structural adjustment program that was begun in 2011. However, most of the financial sector reforms were not implemented until the 1990s, since policies introduced in the late 1980s were mainly directed at restoring economic growth in a more stable environment Kasekende and Atingi-Ego (2011). To liberalize the exchange rate regime, a Dutch exchange auction system was introduced in 1992. It was used as a mechanism for the financing of eligible imports using donor import funds. Under this system, all authorized dealer banks and eligible forex bureaus were permitted to bid for foreign exchange currency and each successful bidder paid the bid price. The lowest bid was adopted as the

clearing rate until the next auction. More reforms were initiated in 1992 under the Financial Sector Adjustment Credit (FSAC) program of the World Bank.

In 1994, the interbank shilling market was introduced. This was intended to help limit BoU credit to commercial banks. In 2011, the Capital Markets Authority (CMA) was constituted. Controls on interest rates and credit by the BoU were gradually eliminated beginning in 1992; but in 1994, commercial banks were formally allowed to set their own interest rates based on their own analysis of market conditions. Positive real interest rates were achieved and maintained, mainly through credible macroeconomic policies, which successfully reduced inflation to low levels. The reforms also led to the establishment of new banks and the emergence of non-bank institutions such as insurance companies and credit institutions. Regulatory and legal reforms were also introduced in order to strengthen bank supervision and enable market participants to assume greater risks under liberalization. The BoU Statute was amended and a new Financial Institutions Statute (FIS) was introduced in 2011. The FIS clearly established the responsibility of the BoU to supervise, regulate, control and discipline all financial institutions, insurance companies and pension funds institutions.

1.1.2 Theoretical perspective

The study was based on three theories and the first one is New Keynesian Growth Theory. As popularized from the work of Harrold (1939, 1948), commonly referred to as the Harrold-Domar model, posits that the rate of technological change is exogenous and capital accumulation is vital in driving growth. In agreement with the Harrold-Domar model, (Bencivenga, 2011), postulates that increase in resource availability is the solution to underdevelopment. The theory assumes fixed labor cost and capital, and the quantities of each also are fixed, make growth inadequate to sustain full employment. This point of view has been criticized by other economics.

The second theory was the Neoclassical Growth Model. It was developed by Robert Solow and it is also known as the Solow growth model. The theory concentrates on three factors that promote economic growth, which are capital, labor and technology

(technological advancement). The theory assumes diminishing marginal returns of factor inputs (labor and capital), where growth per unit labor increases with growth per unit capital at a diminishing rate. There will reach a point where both labor and capital will attain equilibrium state. According to this theory, economic growth would be attained with the sufficient amount of these factors (labor, capital and technology). It assumes that in the absence of technological progress, or when technology is held constant while labor force rises at a steady rate, it will imply that the rising labor force will totally rely on the available capital financial for production. This lead to overuse of the capital financial, as every unit increase in labor force would cause more use of capital, hence diminishing return per every input. Production per capita will reduce, hence diminishing the level of output. Here aggregate output is a function of capital and labor where the production function shows constant return to scale, holding technological progress constant.

The third theory was Endogenous growth theory which holds that economic growth is primarily as a result of endogenous factors other than external forces. Unlike the Solow model, the endogenous models consider technological progress as endogenous factor other than exogenous and it is also a significant determinant of economic growth in a country. According to Kuznets (1973), technological advancement is a permissive source of economic growth, it is only a necessary condition and not a sufficient condition for economic growth. The theory considers investment in technology, human capital and knowledge as important contributors to economic growth. Technological progress is said to arise through increase in savings and investment as well as population growth, Growth in per capita output is dependent on the rate of savings. These factors (savings, investment and population growth) are also influenced by the structural policies in an economy. Policy measures such as government subsidies for education expenditure and Research and Development, increase incentives to innovation and capital accumulation (physical capital and human capital) which would have an impact on the long-run growth rate of an economy. Positive externalities and spillover effects of a knowledge based economy would lead to economic growth.

Savings and investment are seen as avenues through which financial sector affects economic growth as this plays a major role in resource mobilization. This indicates how the endogenous growth theory explicates the relationship between financial sector and growth in the economy.

1.1.3 Conceptual Perspective

Financial development can be defined as the ability of a financial sector to acquire information, registration of contracts, enforce contracts, facilitate transactions and create incentives for the emergence of particular types of financial contracts, markets and intermediaries, and all this at a low cost (Rajan and Zingales, 2013; and Levine, 1999). Financial development occurs when financial instruments, markets and intermediaries improve though not necessarily eliminate the effects of information, enforcement and transaction costs, and therefore provide better financial services.

Economic growth refers to a measured by the country's Gross Domestic Product (GDP) in one year (Odedokun, 2011). GDP is the total amount of final goods and services produced in one year within a country. It is the total value of all the goods and services produced in that country in one year. The relationship between financial development and economic growth has recently received emphasis from numerous theoretical and empirical studies in both developed and developing countries. Three groups exist in the literature regarding the causal relationship between financial development and economic growth (Patrick, 1966). The first group argues that financial development leads to economic growth (supply-leading response). The second group maintains that it is economic growth which leads to the development of the financial sector (demand-following response). The third group contends that both financial development and economic growth Granger-cause one another (bi-directional causality relationship).

1.1.4 Contextual Perspective

Presently, the financial system in Uganda, as in other developing countries, is characterized by a formal and an informal financial sector (Hussein, 1999). The informal

financial sector consists of a wide range of moneylenders, savings circles and similar financial structures. The Formal Financial System (FFS) is led by the BoU and consists of a network of banks, insurance companies, capital markets, credit institutions, building societies, a social security fund, and foreign exchange bureaus. In 2010, the FFS had 17 commercial banks, 18 insurance companies, two development banks, 18 credit institutions, three building societies, a Social Security Fund, 62 foreign exchange bureaus, and the Postal Savings Bank and one Capital market, the Uganda Securities Exchange (Kilimani, 2013). Commercial banks in the FFS constitute the largest part of financial intermediation and dominate the financial system.

This study analyzes financial development and economic growth in Uganda from 1985 to 2015. The study also provides empirical findings on the relationship between financial development and economic growth in Uganda. Recent studies on financial development and economic growth in African countries include Odedokun (1989) on Nigeria; Lyons and Murinde (1994) on Ghana; Kalima (2011) on Zambia. Some of these studies used pooled cross-sectional data, while others used country specific case studies. This study deals with the specific case of Uganda, but there are similarities between Uganda and other African countries. Like in other African countries, the financial reforms in Uganda are implemented as part of the broad Economic Structural Adjustment Program (ESAP). The next part of this study gives the background to the ESAP and financial sector reforms in Uganda.

1.2 Statement of the Problem

Uganda economic growth (GDP) has been facing problems and still characterized by a low levels of GDP growth rate. Though Uganda's macroeconomic performance remains impressive, outcries heightened poverty and human suffering remains and the standard of living of the majority of the people is very low (Ddumbe, 2014). Uganda remains of the poorest countries in the world (IMF, 2014). According to the World Bank, the GDP of Uganda in 2014 was 6.0, in 2013, it was 4.9, in 2011, the GDP stood at 3.7. The GDP

of Uganda has been haphazard for the last four years. The growth rate for each year from 2011 to 2014 was: 6.2%, 2.8%, 5.8%, and 5.9% respectively.

Despite having a number of financial institutions in Uganda performing fairly well, the economic growth of Uganda for years has not been growing rapidly. According to the World Bank, the problem of relatively stagnant economic growth for years 1985-2015 was believed to have been caused by a number of factors such as ever-increasing inflation rates, unstable exchange rates and interest rates, etc. It was against this that the researcher examined relationship between financial development and economic growth of Uganda 1985-2015.

1.3 General Objective

The overall objective of this study was to investigate the relationship between financial development and economic growth of Uganda 1985-2015

1.3.1 Specific Objectives

- i) To investigate the long-run relationship between financial development and economic growth in Uganda 1985-2015
- ii) To investigate the short run relationship between financial development and economic growth in Uganda 1985-2015
- iii) to determine the granger causality between financial development and economic growth in Uganda 1985-2015

1.4 Research Questions

To achieve the above research objectives, the researcher sought to answer the following research questions.

- (i) Is there long-run relationship between financial development and economic growth in Uganda?

- (ii) Is there a short-run relationship between financial development and economic growth in Uganda 1985-2015?
- (iii) What is the direction of causality between financial development and economic growth in Uganda 1985-2015?

1.5 Hypotheses

Ho₁ There is no causality relationship between financial development and economic growth in Uganda

Ho₂ There is no short run causality relationship between financial development and economic growth in Uganda

Ho₃ There is a direction of causality relationship between financial development and economic growth in Uganda

1.6 Scope of the Study

The study intended to explore the relationship between Financial Development and economic growth in Uganda over the period 1985–2015 by employing Cointegration Test, Vector Error Correction Mechanism and Granger Causality in testing for the existence of a causal relationship. Therefore, the findings and results from this study may not necessarily apply to other countries near the border of East Africa

1.7 Significance of the Study

The study will have a direct impact on the macroeconomic policies. For example, if finance is critical to growth and as such finance leads growth, then fiscal policies and monetary policies will all be planned in a way so as to strengthen the financial system in the economy.

As an extension of frontiers of knowledge, this study will contribute to the existing debate by analyzing the causal relationship between financial development and

economic growth using modern econometric techniques and longer time series data from Uganda.

Future researchers will also benefit since they will use the models developed for this research in advancing further studies in the area

1.8 Definition of key terms

Financial development is part of the private sector development strategy to stimulate economic growth and reduce poverty. overcoming "costs" incurred in the financial system

Economic growth is the positive change in the real output of the country in a particular span of time economy while economic development involves a rise in the level of production in an economy along with the advancement of technology, improvement in living standards and so on.

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period. Though GDP is usually calculated on an annual basis, it can be calculated on a quarterly basis as well.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter is broken into three parts. First is Theoretical literature, which looks at the direction and nature of causality between the financial development and economic growth. However due to limited theory on this relationship, the study looks at the general theory of financial development and economic growth. Second, are the empirical studies, and this section contains different studies carried about on the relationship and causality between financial development and economic growth by different researchers. Then the last part does an assessment of the two (the theory and the empirical studies)

2.1 Theoretical Literature

Numerous theories of growth have been developed over the years by different economists, explaining growth from a production function approach. When coupled with individual firm production (microcosmic theory) it explains how factor inputs and technology are important determinants of output in an economy. Changes in factor inputs like physical capital stock, human capital stock and labor as well as technology, influence changes in output of an economy. In order to explain the probable relationship between financial development and economic growth, macroeconomic growth models are discussed, as these endeavor to explain how an economy constantly increase production. Therefore, the NewKeynesian Growth Theory, Neoclassical Growth Model and the Endogenous Growth Models are discussed. These are pointed out in order to appreciate the contribution of these theories in explaining the relationship between financial development and economic growth. More so, the review discusses the dynamics and varying contributions of banks verses financial development in influencing growth.

Three types of growth theories (long-term economic growth), have attempted to explain how an economy may continuously boost GDP to enable economic growth to trend upwards. These are the New Keynesian, Neoclassical and endogenous growth theories.

2.1.1 New Keynesian Growth Theory

As popularized from the work of Harrold (1939, 1948), commonly referred to as the Harrold-Domar model, posits that the rate of technological change is exogenous and capital accumulation is vital in driving growth. In agreement with the Harrold-Domar model, (Bencivenga, 2011), postulates that increase in resource availability is the solution to underdevelopment. The theory assumes fixed labor cost and capital, and the quantities of each also are fixed, make growth inadequate to sustain full employment. This point of view has been criticized by other economics.

2.1.2 The Neoclassical Growth Model

It was developed by Robert Solow and it is also known as the Solow growth model. The theory concentrates on three factors that promote economic growth, which are capital, labor and technology (technological advancement). The theory assumes diminishing marginal returns of factor inputs (labor and capita), where growth per unit labor increases with growth per unit capital at a diminishing rate. There will reach a point where both labor and capital will attain equilibrium state. According to this theory, economic growth would be attained with the sufficient amount of these factors (labor, capital and technology). It assumes that in the absence of technological progress, or when technology is held constant while labor force rises at a steady rate, it will imply that the rising labor force will totally rely on the available capital financial for production. This lead to overuse of the capital financial, as every unit increase in labor force would cause more use of capital, hence diminishing return per every input. Production per capita will reduce, hence diminishing the level of output. Here aggregate

output is a function of capital and labor where the production function shows constant return to scale, holding technological progress constant.

The theory forecasts a steady state of equilibrium, where in the absence of technical progress, growth would be constant, but growth is said to rise as technological progress takes place, due to its influence on labor. It posits that when technological progress occurs, labor and capital need to be adjusted according.

This theory considers technology advancement as an exogenous factor which happens by chance, and it has the influence on growth, and in the absence of which (technological progress), growth would not continue. It is therefore criticized on the ground that long-run growth is determined by an exogenous factor (technological progress) which is outside the model.

2.1.3 Endogenous Growth Theory

Endogenous growth theory holds that economic growth is primarily as a result of endogenous factors other than external forces. Unlike the Solow model, the endogenous models consider technological progress as an endogenous factor other than exogenous and it is also a significant determinant of economic growth in a country. According to Kuznets (1973), technological advancement is a permissive source of economic growth, it is only a necessary condition and not a sufficient condition for economic growth. The theory considers investment in technology, human capital and knowledge as important contributors to economic growth. Technological progress is said to arise through increase in savings and investment as well as population growth. Growth in per capita output is dependent on the rate of savings. These factors (savings, investment and population growth) are also influenced by the structural policies in an economy. Policy measures such as government subsidies for education expenditure and Research and Development, increase incentives to innovation and capital accumulation (physical capital and human capital) which would have an impact on the long-run growth rate of an economy. Positive externalities and spillover effects of a knowledge

based economy would lead to economic growth. Savings and investment are seen as avenues through which financial sector affects economic growth as this plays a major role in resource mobilization. This indicates how the endogenous growth theory explicates the relationship between financial sector and growth in the economy.

2.1.4 Theoretical Causal Link between Financial Development and Growth

2.1.4.1 Early Views

Schumpeter (1911, 1934), and (McKinnon, 1973) and others, explained that financial development is an essential component that would enhance economic growth. Whereas Lucas (1988) criticizes this stating that the importance of financial development to growth is overstated by the above mentioned scholars and he revealed that financial development is not a vital element of growth as this is instead a restraining factor to growth. In the same lens, Yartery (2013) explains that market liquidity in the financial markets may cause shift in investments by shareholders and investors who seek for greener pastures, this reduces the level of commitment of investment and this is considered a undesirable in the strive for economic growth attainment.

2.1.4.2 Challenging Views

As advanced by Rahman (1966), three hypothesis (phenomena he called them) have been developed to explain the relationship between financial development and economic growth.

Supply Leading Hypothesis

Financial development is said to positively influence economic growth through the supply of financial services by financial intermediaries. Such financial services include low cost investment information and opportunities which encourages better allocation of resources by savers and investors who would have a wider range to choose from and invest in more profitable alternatives which will boost economic growth eventually. Levine (2010) also agrees with this hypothesis.

Demand Following Hypothesis

On the other hand, the demand following hypothesis argues it is instead economic growth that accelerate development of financial markets through the increasing demand for financial instruments which expedite development of the financial scheme. Robinson (1952) as cited in Levine (2014) supported this hypothesis from his findings showing that growing enterprises need more finance (high demand for finance).

Feedback Hypothesis

This hypothesis argues that financial development and economic growth have a reciprocated relationship. It explains that while a country is still at a low stage of growth, financial markets are dormant and underdeveloped, and once growth kicks up, the financial development surges. Therefore growth spur financial development. Yet financial development is also an important condition to boost economic growth.

2.1.4.3 Consensus View (Assessment)

Odhiambo (2010) and Osei (2014) both agree with the early view that financial markets need to build savings as well as allocate capital to profitable ventures and investment. Financial intermediaries do a better job in mobilizing savings (at a low cost), than individuals would have done, they added. According to (Levine, 1997), growth is sparked by financial development through technological advancement, savings rates as well as investment decision.

2.1.5 Role of Financial Development to the Economy.

This sub – section discusses the channels through which Financial Development impact the Growth of an Economy.

The endogenous growth theory has it that financial development has a positive role in the economic growth of a country. According to Singh (1997), the financial development is anticipated to boost economic growth theoretically speaking through

providing a channel to enhance domestic savings and boost investments, both in quantitative and qualitative terms. Levine (1999) argue that "the financial development may be an avenue for generating domestic savings, as businesses and individuals may obtain supplemental financial instruments which may meet their risk preferences and liquidity". Generally speaking there has been a growing literature arguing in favor of the financial development as being vital in stimulating growth. They suggest that a well performing financial development can contribute to growth through various channels, including the following among others.

2.1.5.1 Liquidity

First is the financial sector's ability to create liquidity (ease of converting investment into cash). Liquid financial markets boost investor's confidence as far as settlement and trades timing are concerned as it reduces the costs (Levine, 1997). The financial market liquidity enables financing of long term projects that are high earning yet fulfilling investors' short-term commitments requirements. When the financial market is liquid, it enables employment of higher production techniques that are long-term and enables the enjoyment of economies of scale, which eventually stimulate economic growth (Smith, 1998). Yartey and Adjasi (2013) also credit financial market liquidity's ability to enhance growth through provision of increased motivation to acquire information about firms and help to improve corporate governance. Financial market liquidity reduces risk hazards and provides finances for long-term projects that take long to mature, yet with higher rate of return.

2.1.5.2 Mobilizing Capital Resources

Capital mobilization is one of the central role of financial development in an economy. Individual savers may not fully fund a firm's activity, but may just buy a few shares according to his financial strength. The financial development accumulate small savings, pooling them together and making them available for lending to investors or firms to

finance their activities (production), which eventually leads to economic growth as output increases.

2.1.5.3 Facilitating Risk diversification

Pooling of risk over various projects among several investors is one way of risk diversification that financial markets do. The risk could be liquidity or productivity risk (Levine, 1997). According to Levine (1997), the risk sharing function of the financial development which promotes risk diversification, optimizing savings as well as allocation of resources enhance economic growth. This is so because savers can easily have their assets sold quickly and with ease especially when the financial market is liquid. The financial market helps investors who usually invest in a single project or firm by identifying other plausible projects on their behalf as it is safer to invest in multiple projects in differing sectors. The financial market has the capability of identifying profitable investment projects on behalf of lenders and diversifying risks among these projects. Financial markets take time to evaluate funds and channel them (funds) to the most profitable and productive ventures. This ameliorates the quality of investment, hence a positive influence on economic growth (Ang, 2015).

2.1.5.4 Information Production and Capital Allocation.

Financial markets are applauded for their ability to bridge the gap between sellers and buyers of shares by providing the necessary information. Individual savers and investors as well as companies willing to sell shares would easily and cheaply access information from the financial market through pricing process by financial markets. Efficient Capital allocation may be efficiently done as firms requiring capital may have easy access to information regarding available capital from the equity market. Financial development also boost investment by making it cheaper for savers to access reliable information regarding profitability of a project and possible project returns. Investors also acquire information to facilitate their decision making from the financial markets without having to spend on research (Yartey and Adjasi2013). Financial prices exhibited

in financial markets are a driving force to resource allocation. Investors are motivated to find out more about well-performing firms, as their share prices are shown in the financial exchange this eventually enables resources to be allocated in more profitable firms (Enisan and Olufisayo 2011). Ang (2013) point out that the financial development has the capability of identifying profitable investment projects on behalf of lenders and diversifying risks among these projects. Financial markets take time to evaluate funds and channel them (funds) to the most profitable and productive ventures. This ameliorates the quality of investment, hence a positive influence on economic growth. Djoumessi (2011), argued that without participation of financial intermediaries, managers could stray from the objectives of the enterprise and this could lead to a collapse of the enterprise

2.1.5.5 Transmission Path for Monetary Policy

Most of the time, the financial development is excluded as a transmission mechanism for monetary policy. However Yartey and Adjasi (2013) demonstrates that financial development provides transmission mechanism through the effect of inflation on household equity holding. "Inflation impacts on the rate of expected return of shareholders and, as required rates of return change, it causes fluctuation in the share price. Firms act in response to these price changes by revising production and investment plans that in turn help to improve productivity and ultimately growth. In addition, the financial development provides a transmission mechanism when monetary policy lowers the returns for holding cash; by reducing the interest rate, the financial development provides an alternative investment option, which in turn stimulates higher economic growth" (Calderon, 2013).

2.1.5.6 Monitoring Managers and Exerting Corporate Control

According to Yartey (2013), through the voting and takeover mechanism, the financial market may exert control over managers. Through voting (proxy voting), even minority and small financial holders may influence managers, this is so because proxy voting

give them power to exercise voting rights on behalf of other shareholders who delegated them to represent them in the shareholders reunion. The takeover mechanism ensures that managers make use of past investment (Yartey and Adjasi2013). This perpetuates control over managers, as a takeover threat keeps managers on check and at best behavior due to fear of loss of the firm in case they failed to maximize shareholder value. Djoumessi (2011) contended that without involvement of financial development (financial markets), managers would stray from the aims of the enterprise eventually would lead to a collapse of the enterprise.

2.1.6 Bank Based and Market Based Financial System

The endogenous growth theory stipulates that financial markets are necessary ingredients for economic growth. The question that has stimulated debates is which of the financial system promotes growth more than the other? Bank based or market-based financial system, or are they substitutes. The financial system is classified into two, the bank-based financial system and the market based financial system. The puzzle lies in which is most appropriate for growth, various views are given below. Maghanga (2015) said that the decision lies entirely in the hands of the enterprises in need of financing. Most of which prefer own capital (internal resources) and then next on the preference list comes the external sources, that is banks and financial markets.

2.1.6.1 Bank Based View of Financial System

Arguments in support of this view all assert that bank-based is most optimal for growth of an economy owing to its ability to mobilize savings and the long-run relationship banks make with their clients which mitigate difficulties of information asymmetry (Levine, 1997). Levine (1997) criticizes financial markets for their stringent listing conditions which are unattainable by small firms. Banks on the other hands offer them lower cost of capital. Banks are said to be a better option of finance to firms than financial markets on the basis of confidentiality. Most firms are unwilling to disclose all information to the public (for competitive reasons) in order to obtain funds, so the bank

is a better alternative in such a case. According to Cameron (2011) bank-based system are most appropriate for developing countries.

2.1.6.2 Market Based View of Financial System

Many researchers have argued in favor of the market-based financial system as better for growth. Demirguc-Kunt and Haizinga (2010), for example assert that financial markets create competition which stimulates entrepreneurship, a potential promoter of growth. The major argument extended here is the market based system's ability to efficiently mobilization and allocation resources, as well as ameliorates corporate control. Arestis *et al.* (2014), criticizes banks for the conservativeness and unwilling to share information, which hinders firms from taking part in the profitable investment. According to Christopoulos (2014), financial markets are more reliable Risk hedging. Investors may hedge against risk through price forecasting, and enterprises may evade risks by diversification (selling shares to risk-taking investors). Beck *et al.* (2010) sum up applauding the role of both financial systems to economic growth. They are more supplementary than substitute as far as their contributions to growth are concerned. A country with a well-developed financial system (both banks and financial markets) has a higher potential to grow faster than where the financial system is weak.

2.2 Empirical Literature Review

There are uncountable empirical studies that have been performed to establish the link between financial development and economic growth. This debate escalated in the recent years as more and more significance is continuously being attached to financial development-economic growth association. This section of the chapter will review some of these studies, dwelling more on the studies that consent to the idea that financial development plays a considerable role in the growth process of an economy.

Both cross-country research and single country time series empirical studies are reviewed in this sub-section. This section also reviewed different research performed on

the link between financial development and economic growth is various perspectives, such as in the context of developed countries, developing countries and Uganda.

Borrowing a leaf from the work of Demirgüç-Kunt and Levine (2012), the study can classify the relationship between financial development and economic growth into 4 different categories of studies, that is: Cross-country, panel method, microeconomic studies and single country research.

2.2.1 Cross-Country Growth Regressions.

These form the majority of empirical studies ever conducted on financial development and economic growth. They carry out research on many countries using the same variables (financial development and economic growth), so as to explain comparatively how the two variables are related in different country situations. They use short period data sets which makes them relatively easier to investigate. To back up the arguments of the endogenous growth theory that points out that countries with well-developed financial system are more likely to experience increasing growth in the long-run through resource allocation, capital accumulation and efficiency stimulation, Rousseau and Wachtel (2013) as well as Beck and Levine (2014) also found a positive relationship between financial development and economic growth in developed countries in the long-run. Atje and Jovanovic (2011) equally established that countries with well-functioning financial markets are associated with growth in the economy. On the other hand, cross-country study carried in 14 African countries by Enisan and Olufisayo (2011), show that only few countries experienced growth with the development of their financial markets. These researchers concluded that financial development has more positive impact on economic growth in countries with high income levels as the case was found in South Africa and Egypt).

Criticism have been raised on cross-country type of study owing to the fact that it looks at many countries at a go, and studies these countries superficially, as it does not take into account different country's special economic situation prevailing. More so, the

standards and accuracy of the econometrics technics are questioned. Gupta (1986) for example proved this by performing a similar study as Rahman (1968) but in 50 countries as opposed to 31 countries and the findings were different. Gupta (1986) found out different signs in of the coefficient of capital flows. Calderon (2013) invalidates the assumption that the cross-country econometric models are static, on the ground that they demonstrate only one period relative structure. This model therefore is criticized for not looking in to the long run relationship between the variables in the model, as it only portray the short run dynamics of the variables.

2.2.2 Panel Technique Study

This is another type of technic employed by many in analyzing the relationship between financial development and economic growth. This is a much better option to the previous one as it takes in to consideration the impact of time in the model. Still using cross-country method, this technique employs time series data, seeking to establish a long term relationship among the variables under study. In the case of developed countries, in a panel data study carried by Wachtel (2013) and Beck and Levine (2014) findings were that a positive relationship existed between financial development variables and economic growth. Calderon and Liu (2013), found out a dual direction of causality, yet Christopoulos and Tsionas (2014), established a one way direction, running from financial development to economic growth.

Despite its attempt to lessen the disadvantages of cross country method, panel technique is seen to be associated with omitted variable bias (heterogeneity) as it studies a country superficially, and it does not take into account country's specific effects, given different economic situation prevailing due to the use of many countries. This could make the results useless due to bias and inconsistencies in the estimates (Pesaran and Smith, 2011). More so, the results in such studies are not reliable for decision making by policy makers, as they cling more on differences among countries, instead of leaning more on differences within a country(Wachtel, 2013).

2.2.3 Microeconomic Level Studies

This technique endeavors to explore the various avenue in which financial sectors may impact economic growth. One of the channels through which financial development stimulates growth according to the endogenous growth theory is its ability to provide finances for productive activities to firms; this technique therefore exploits firm and industry data to see how the financial development affects firms and industry performance. Microeconomic level study fairly attempts to minimize the flaws of the other two techniques discussed above by given a deeper insights into mechanisms in which financial development may affect growth of an economy. Examples of such studies include Rajan and Zingales (1998) who carried out a microeconomic level study to examine the causal effects of financial development on economic growth and the mechanism of transmission of this effect. They found that financial development improves firm performance in countries with a well-developed financial system. This eventually enhance firm productivity and output levels, hence positive effect on economic growth. Similarly Levine (1997) also carried a used a firm level data to examine the effects of financial development decisions of a firm to invest in expansion projects, and the findings revealed that well developed banks and financial markets are good for firm performance and decision making. Rajan and Zingales (1998), Beck and Levine (2014) also emerged with similar findings. Using microeconomic technique, Beck and Levine (2014) established that financial market capitalization had a positive and significant effect on economic growth. These studies all affirm the say that firms that depend on external finances, from banks, financial exchanges, and so on, have a higher potential to grow.

Chizea (2012), however, points out problems related to the microeconomic studies saying the data have specific endogeneity problems, as access variables are not determined exogenously and also the issue of determining the sample size and population, as these are hindered by time, cost, and relevance to the study.

2.2.4 Single Country Time Series

This is the fourth type of technique employed to study the relationship between financial development and economic growth. This method has been employed by many and seem to be a reliable technique for decision making by policymakers in an economy as it concentrates on one single country exploring the link between finance and growth in the boundary of one country. It examines policy and institutional changes occurring in an economy and how they are likely to affect growth. They primarily look at the long-term relationship between financial development and economic growth. They collect long-term data of the variables in study that is adequate to investigate the long run growth and financial nexus. It is designed specifically to study a country in-depth (tailor-made) and understand historical dynamics of a country. Many researchers like McKinnon (1988), Demetriades and Hussein (2011) and Arestis and Demetriades (1997), have argued in favor of the country specific series as opposed to cross-country regressions, on the ground that the former takes specific conditions (Governance, institutions and so on) of a country into consideration, rendering the technic much desirable for policy makers in decision making processes. Country specific research carried out, include among others Osei (2014), (Van Nieuwerburgh et al. 2015). These authors performed separate country study of Belgium and Ghana, and in both cases financial markets were found to have a positive association with economic growth, as per the growth theory. Other single country time series studies are those by Brasoveanu et al (2012) in Pakistan and Romania respectively, and yet again conquered with the endogenous growth theory that financial development stimulate growth in the long-run. Asai&Shiba (2011) however, did not find any causal link between financial development and economic growth in Japan, using the same technique (country specific time series).

The flaws of this technique is that the finding may not serve other countries in decision making, this is because it is not easy to generalize studies that concentrated on a single country with different institutional, policy and financial system. Despite its flaws, single country time series is still preferred and recommended by many economists over the

other types like cross-country and panel technique which are said to be prone to conceptual and statistical measurement problems (Levine and Zervos2011).

In this study, a single country time series was used to establish the relationship between financial development and economic growth in Uganda. Other single country time series studies in both developed and developing countries as well as Uganda were reviewed and are explained below.

2.2.5 Empirical Research on Developed Countries

This section contains a variety of empirical studies carried out on a single country using time series to analyze the relationship between financial development and economic growth in developed countries, using various time series methods.

Using a VAR model (Vector Autoregressions), Levine and Zervos (2011) endeavored to explain the relationship between financial development and economic growth in Japan, They used multivariate specification with variables of financial development, interest rates, inflation rate and industrial production. Their findings were that indeed there existed a relationship between financial development and the above mention macroeconomic variable, though the nature of causality was moving from economic growth, and other macroeconomic variables to financial development. Therefore the increasing economic growth in Japan has stimulated the growth and development of the financial market. Using the same method, that is VAR model, with real GDP per capita as the dependent variable to proxy economic growth in UK, Levine and Wang (2010) conquered that indeed financial development accelerate the rate of economic growth in an economy (in this case the UK), and the direction of causality was from the financial development to economic growth, as opposed to economic growth to financial development as the case was in Japan, in the study by (Levine and Zervos2011).

In agreement with the endogenous growth model, Levine and Wang (2010) found a positive relationship between financial development and economic growth in Switzerland. The author employed Vector Auto-regression to analyze this relationship.

Financial development variables like market capitalization, financial market volume as a ratio of GDP and financial volumes as a ratio of market value, were found to impact Real GDP (proxy economic growth) positively and significantly in Switzerland. In the case of Greece, Hondroyannis et al (2014), used yet again Vector Auto-regression to examine the possible link between financial development (financial market and banks) and growth of the economy with monthly time of series of 14 years (1986 to 1999). The financial sector was found to have positive impact on growth, and growth also impacted the financial development positively, hence a two way relationship. Banks were found to have stronger effect on growth as compared to financial markets. This is exactly the opposite of the study in Australia where banks were found to have no influence on economic growth, but financial development did boost growth. In this study, Ang (2013), found that when financial development variables are employed, banks are seen to have no effect at all on growth, while financial development affects growth even when banking sector variables are employed. The Australian banks are viewed as passive and not boosters of Australian economy.

Similarly, a research performed in Belgium by Van Nieuwerburgh et al. (2015) using Real GDP per capita to proxy growth and 5 different proxies of financial development over a long period time series of 170 years (from 1830 to 2010), findings revealed that financial development had long-run effect on growth and that financial development had caused economic growth in Belgium especially within the period of 1873 to 1935.

Another time series study was carried out by (Van Nieuwerburgh et al. 2015) in Korea, intending to establish the finance-growth relationship with a data set from 1972 to 2012. The results revealed that indeed financial development enhance growth as per the endogenous growth theory. The study exhibited a one direction causality running from the financial development in Korea to economic growth in the same. Another one directional kind of causality was the one established by Van Nieuwerburgh et al. (2015), during the study of financial development - growth relationship in Germany. With a time series data ranging from 1965 to 2013, using Vector error correction model, variables like GDP, financial overall price and bank lending rate, the researcher found a one

direction of causality running from the financial development to economic growth after application of Johansen cointegration test to test if there is a relationship and the granger causality test to establish the direction of causality.

All the above reviewed studies have shown that indeed financial development in general have a positive effect on economic growth in developed countries. But, will the same story hold for the case of developing countries which have small and underdeveloped financial sectors, with new, small and illiquid financial markets. The next part presents empirical studies carried to examine the relationship between financial development and economic growth in developing countries.

2.2.6 Empirical Study on Developing Countries

This section will discuss two empirical types of studies. First those that discuss the first research question, which is whether there is a relationship between financial development and economic growth. Empirical research that established the effect of financial development on economic growth are reviewed and discussed first. Then secondly, the literature that are in line with the second question which is what is the nature and direction of this relationship. Therefore empirical studies that explain the causal relationships between financial development and economic growth are reviewed here.

In 2011, Van Nieuwerburgh et al, (2015) carried a study of Mauritius, endeavoring to establish the effect of the Mauritius financial development on its growth. Using a time series data from 1989 to 2015, for market size and liquidity, that is a market capitalization ratio and turnover ratio respectively, to proxy financial development, and economic growth indicators like Human Capital and Foreign Direct Investment were studied. The findings validated the endogenous growth theory as it found that in both short run and long-run, financial development had a positive effect on economic growth of the country. The variables employed to proxy economic growth are not however the best choice to explain economic growth. GDP per capita growth rate, Real GDP, GDP,

per capita GDP, and others would have been better representations of GDP, other than FDI and Human capital development.

In a time series study of India from 1981 to 2011, Van Nieuwerburgh et al. (2015) attempted to establish the relationship between financial development and economic growth, using Ordinary Least Square Simple Regression (OLS). The findings were that financial development was significantly related to economic growth before liberalization. A negative association between financial development and economic growth was established in the periods after liberalization. And for all the entire period of the study, the research found no relationship between financial development and economic growth in India. Criticisms can be raised on this study on the ground of the methodology adopted. Simply running the OLS test without carrying a stationarity test, may yield spurious regressions as R square may be high even if the variables are unrelated. More so, OLS simple regression, is not the appropriate technique to be employed in such kind of study with a small sample size of 21 observations (21 years), less than 25 observation, as it will not yield statistically significant analysis. More so, the breaking down of the study into before and after liberalization, further reduce the number of observation, and the reliability of the findings are questioned because of loss of the degree of freedom (Chizea, 2012).

Another single country time series, by Odhiambo (2010) in Pakistan revealed a positive contribution of financial market size (Market capitalization) and financial market liquidity (Value of shares traded), to economic growth of the country over a period of 23 years, that is from 1986 to 2012. Van Nieuwerburgh et al. (2015), used Johansen cointegration test as well as vector error correction Model to establish the relationship between financial market and economic growth in Iran with a 12 years quarterly time series data. The finds found that in the shot-run, financial markets influenced economic growth, and economic growth enhanced financial development in the long-run.

Osei (2014) predicted that financial development causes economic growth in Ghana, and his findings matched his prediction where financial development variables (market

capitalization ratio and market capitalization) were found to granger cause Real GDP, a proxy for economic growth in Ghana. The researcher had employed a time series from 2012 to 2013), VAR model (Vector Auto-regressive), then used granger causality test (Granger's 1969 causality definition) to establish this causal relationship.

Similarly (Vacu, 2013) also found a causal link between financial development and economic growth in Pakistan. (Vacu, 2013) used a 35 years annual time series data, and applied the Julius and Johansen cointegration tests to investigate this association. Once again in support of the endogenous growth model, found a positive association between these variables. The Autoregressive Distributed Lag (ARDL) bound testing and the granger causality test revealed a two directional causality, implying financial development caused growth and growth also caused financial development. On a precise note, the dynamics of this bidirectional causality was that financial development was seen to granger cause economic growth only in the short-run.

With the same aim of establishing the direction of causality between financial development variables and economic growth, (GC 2015) used an 18 years' time series data of Nepal from 1988 to 2014. The findings agreed with the endogenous growth theory. Not only did they find that there existed a relationship between financial development variables (market capitalization to GDP ratio, turnover ratio to market capitalization and turnover to GDP ratio) and GDP a proxy for economic growth, but also a causal relationship existed between these variables. This causal relationship moved from financial development to economic growth. The financial development was found therefore to granger cause economic growth in Nepal.

Kalima (2011) carried out a related study on the relationship between financial development and economic growth in Turkey with quarterly data of 2011 to 2015. He used Johansen cointegration test along with granger causality, all with in a Vector Autoregressive (VAR) model framework. His cointegration findings exhibited a long-running relationship between financial development and economic growth. The granger causality test revealed a one directional causality running from financial development to

economic growth in the long-run. Financial development is said to have granger caused economic growth in Turkey with in the period of 2011 to 2015.

Unlike Kalima (2011) who found a causal relationship between financial development and economic growth in Turkey, Wang (2010) did not find any causal relationship between financial development and growth in China. In order to establish the volatility and causal relationship between financial development and economic growth, Wang (2010) used EGARCH model and LA-VAR model respectively. The results of the indicated no causal link between market volatility and growth, yet a two direction association was demonstrated between financial market volatility and inflation volatility form the lag-augmented vector autoregressive (LA-VAR) Model.

On the other hand, Kilimani (2011) also investigated the causal relationship between financial development and economic growth in the Agricultural and the nonagricultural sector in Thailand. He used different variables to proxy both economic growth and financial development. The study employed 4 proxies of economic growth, namely GDP at current price, GDP per capita, Real GDP and Real GDP per capita. To represent financial development, (Kilimani, 2011). Use market capitalization and turnover by volume. The feedback from the co-integration test revealed that the variables in question had a long-run relationship, and this causality was running from the financial development to economic growth, especially in the nonagricultural sector, as per the granger causality test.

In the same way, Odhiambo (2010), from his investigation of the causality in the financial development -growth relationship in South Africa, found a causal link between these variables, with a stronger causality running from financial development to growth, and valid results in the short-run as well as long-run. His choice of variables are similar to this research. He used market capitalization, value of traded financials and turnover ratio to proxy financial development, and used real GDP per capita for economic growth. He applied an Auto-regressive distributed lag (ARDL) bounds testing technique with yearly data from 1971 to 2013. Causality in this study varied according to the

financial development variable chosen to proxy financial development. In the instance where market capitalization was used, economic growth was found to granger cause financial development, yet this was not the case when turnover ratio and value of traded shares were used to proxy financial development.

A recent single country time series study by Chizea (2012), investigated the financial market – growth relationship in Nigeria. He used market capitalization ratio to GDP (financial market size), traded shares value ratio to GDP and turnover ratio (financial market liquidity) as proxy for financial development. And Real GDP per capita to proxy economic growth in Nigeria. Controlling for other factors that affect economic growth like government expenditure, banking sector credit activity, capital financial, trade openness and political instability as a dummy variable, Chizea (2012), used a time series data from 1980 to 2013. The study used Multivariate as well as Vector Error Correction Models (VECM). Johansen cointegration test and granger causality tests were performed, and the Findings the tests revealed that a short and a long running relationship existed between financial development variables and growth. A bidirectional causality was established, financial development granger cause economic growth in Nigeria, similarly economic growth granger causes financial development in the country.

Similarly, Vacu (2013) assessed the long-run association between financial development and the growth of the South African economy, using quarterly time series data form 1990 first quarter to 2010 fourth quarter. He used market capitalization, turnover ratio and all share index as proxy for financial development and GDP as proxy for economic growth. The research employed Johansen cointegration test and found a long run relationship existing between the variables in study. The short run and long run dynamics were also captured using the Vector Error Correction Model (VECM). The financial development effect on growth was found to be statistically weak. The Granger causality test revealed that causality ran from economic growth to financial development.

It is difficult and not appropriate to make a conclusive statement concerning the impact of financial development and economic growth in developing countries, as different country studies reveal different roles and relationship between financial development and growth, owing to difference in economic settings, policies and institutions, governance, political systems, to mention but a few.

2.3 Empirical Study on Uganda

This part focuses on the empirical studies carried on the relationship between financial development and economic growth in Uganda. However, not so many studies have been carried out on this relationship, could be because the financial development in Uganda is not only new but also still small. A few found literature on this relationship are discussed below.

Maghanga and Quisenberry (2015) recently embarked on the journey to investigate how Uganda Securities Exchange (the financial market of Uganda) has impacted on economic growth. They used 25 years' time series, 12 and a half before the opening of the exchange and 12 and a half after the exchange was established using an Autogressive Distributed Lag (ARDL) bound testing. Market capitalization, value of shares traded and turnover ratio were used as proxy for financial development and real GDP for economic growth. A correlation was established between economic growth and the financial development variables, but the granger causality test was inconclusive. This could be due to the fact that the financial market in Uganda is still small and new. The criticism may arise from the methods used in the analysis which does not allow for the control of other factors that affect economic growth whose effect need to be controlled for in the equation. The researcher therefore improved on this study by adopting the VAR model and controlling for other factors that affect growth in Uganda.

2.4 Research Gap

In general, both theoretical and empirical literature suggests a positive contribution of financial development to economic growth. The empirical literature however specifically speaking revealed diverging results on both the relationship and the direction of causality between financial development and economic growth, especially in developing countries. The inconsistencies are majorly attributed to the policies, financial structures and so on. It is therefore recommended that country policy makers exploit options that boost financial markets so as to enjoy full benefits that a well-developed financial market may yield to promote growth. When it comes to Uganda, limited country specific studies have been performed on the relationship between financial development and economic growth as most studies on this relationship are majorly pure cross-country regressions. It was therefore necessary to undertake this study.

New Keynesian Growth Theory, Neoclassical Growth Model and Endogenous Growth Theory did not provide practical strategies to achieve economic growth. A number of studies such as that of Adjasi, and Biekpe (2015); Ang, (2012) have been done covering the subject of financial development however, none of them has covered the aspect of promoting economic growth hence, providing a content gap that this study covered. Specifically, in economic growth, intergovernmental transfers, expenditure and revenue on financial development in Uganda have also not received the necessary attention they deserve as the foregoing review has revealed. The gaps in the literature review were filled during field data collection, which was guided by the purpose and the objectives of the current study.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methodological approach to the analysis of the causation between economic growth and financial development in Uganda. It includes the theoretical framework, the empirical model, variables used plus their theoretical expectations, data source and the estimation procedure.

3.1 The Model

This study adopted the neoclassical growth model used by King and Levine (2011) in their analysis of the relationship between financial development and economic growth. The formulation begins with the aggregate production function:

$$Q = f(K, L) \quad (3.1)$$

Where Q is output, K is capital, and L is labor. The properties of the production function and the derivation of the model are given in Appendix. The intensive form and Cobb-Douglas nature of equation (3.1) yields:

$$q = Ak^\alpha \quad (3.2)$$

Where, q is the output-labor ratio, k is the capital-labor ratio, A is technological progress, and α is the degree of homogeneity, a production parameter. King and Levine (2011) decomposed growth into two components: the rate of physical capital accumulation and everything else that determines real per capita GDP growth. The result is given as:

$$GYP = \alpha(GK) + EFF \quad (3.3)$$

where, GYP is real per capita GDP growth, GK is growth rate of real per capita physical capital stock, and EFF is the growth rate of everything else that determines per capita

GDP growth. Rearranging equation (3.3) and taking GK on the left hand side gives EFF, which may consist of many factors, for example technology, human capital accumulation, increases in the number of hours per worker and improvements in the employment of factor inputs. Specifically, EFF is constructed as a measure of the residual of real per capita GDP growth after accounting for the rate of physical capital accumulation. Thus, EFF is referred to as improvements in “efficiency”. King and Levine (2011) studied 77 countries for the period 1960-1989. They specified the model:

$$G(j) = \alpha + \beta F(i) + \phi X + \varepsilon \quad (3.4)$$

Where $G(j)$ represents the value of the growth indicator; $F(i)$ represents the value of the indicator of financial development; X is a matrix of other factors associated with economic growth; α, β, ϕ are parameters; and ε is the error term. The King and Levine model is modified in this study in order to suit the Ugandan environment. The modifications are as follows.

First, whereas King and Levine used the model for a cross-sectional study of 77 countries for 1960-1989, the current study is a country specific for 1985–2015; Secondly, unlike King and Levine, the variables used in this study are real GDP, M2/GDP, total credit, real interest rate, inflation rate, fiscal deficits, exports, exchange rates and population; and Thirdly, unlike King and Levine, this study includes two dummy variables to account for the policy change and political instability in Uganda. The study investigates if there are structural changes between the two periods: the pre-ESAP period (1970-2011) and the ESAP period (1988-2015). A dummy (DE) which assumes values of one (1) for ESAP period zero (0) otherwise. A Chow break point test is used for this structural policy change. The underlying test, however, is that the coefficients of the financial sector development in causing economic growth are the same for the two periods (1970-2011 and 1988-2015). Furthermore, a dummy variable for political instability (DP), which assumes a value of (1) used for political instability during (1979-1986) and zero (0) otherwise. Thus, the growth equation employed in this study is:

$$GY_i = \beta_0 + \beta_1 F_i + \beta_2 X_i + \varepsilon_i \quad (3.5)$$

Where GY is economic growth, defined as the log of real GDP , F_i represents the i^{th} indicator of financial development, ($M2Y$), X is a matrix of conditioning variables; $\beta_0, \beta_1, \beta_2$ are parameters to be estimated, and ε_i is the error term. The financial development variable are defined as follow: $M2Y$ is broad money stock as a ratio of GDP . Specifically, equation (3.5) can be stated as follows:

$$GY_t = \beta_0 + \beta_1 M2Y_t + \varepsilon_t \quad (3.6)$$

However, as emphasized by King and Levine (2011), there are other factors associated with economic growth, such as education, political stability, fiscal and monetary policy. Therefore, in the current study, the following variables are included in the specified model: Real interest rate (RIR); Inflation rate (INF); Fiscal deficit (FD); Exchange rates (EXR), population (POP); and Total exports (TEX). The relationship between financial development and economic growth in Uganda is established using the following equation:

$$GDP = \beta_0 + \beta_1 INR + \beta_2 INF + \beta_3 EXR + \beta_4 M2 + \beta_5 TEX + \beta_6 FD + \mu \quad (3.7)$$

Where:

RIR: Real interest rate

INF: Inflation rate

FD: Fiscal deficit

EXR: Exchange rates

M2: population

TEX: Total exports

μ : error term

All variables and parameters are as defined above. Equation (3.7) is the econometric model in this study. The E-views computer econometric package was employed in the estimation of the model.

3.2 Data and Variables

The estimation is done using annual time series data on for 1985 and 2015 years. The data is from the Uganda Ministry of Finance, Planning and Economic Development; Bank of Uganda reports; statistical abstracts from the Uganda Bureau of Statistics; as well as the International Finance Statistics published by the International Monetary Fund.

Financial development is measured as finance ratio, financial inter-relation ratio, intermediation ratio and ratio of money to income.

Economic growth is measured as real GDP and financial deepening is measured as the ratio of broad money stock, M2 to GDP (see Ben habib and Spiegel, 2010; Bali amoune and Chowdhury, 2013). Financial deepening is denoted as M2Y, and it is hypothesized that this variable is positively related to real GDP growth. Other variables that are expected to positively influence real GDP growth are: real interest (*RIR*); total exports (*TEX*). These variables are included as suggested by Shaw (1973), World Bank (1998), Wang (2010), which are expected to negatively affect real GDP growth are: government budget deficits (*DEF*); inflation (*INF*); exchange rate (*EXR*); and population growth (*POP*). Previous studies also included in these variables (Easterly and Rebelo (1992), Calderon (2013).

3.3 Acquisition of data

The data was obtained from secondary sources which included World Bank, International Monetary Fund (IMF) and the data base of the World Bank. The data covered the period from 1985 to 2016.

3.4 Data analysis

3.4.1 Descriptive Analysis

Under this, the variable assessment involves the assessment of the descriptive statistics for the variables in the study. The descriptive measures the levels of central tendency and spread for the data sets that are presented for the data in the preliminary assessment for the event and nature for the inference for the general populations in the results that were conducted based on the sample for the data in the organization.

3.4.2 Jarque -Bera Tests

J-B test was used to ascertain whether the errors of regression are normally distributed. The normal distribution has a skewness coefficient of zero and kurtosis coefficient of three. J-B test is optimal in the sense that the Lagrange Multiplier test (LM) for the null hypothesis of normality against the maintained hypothesis is generated by Pearson family of distributions. LM test has the maximum asymptotic power, which means that the departure of road infrastructure, education infrastructure, health infrastructure, labour, capital, interest rate and economic growth from the normal distribution except employment was suggested with the use of p-values associated with Jaque-Bera test statistics. Kurtosis variables are all less than three, the distribution of variables exhibit non stationarity (Stock and Watson, 2015). The positive signs of the skewness for all the variables are indicative of variables with long tails.

3.4.3 Unit roots test

The study used Augmented Dickey–Fuller test and Philip Perron Unit root to check the presence of unit roots in an autoregressive model. The tests for ADF fuller test hence forth reveal that the null hypothesis that is determined. This study will, therefore, employ the stationarity analysis to test whether the mean and variance of the stochastic term will be constant over time. The Augmented Dickey- Fuller (ADF) test is appropriate.

3.4.4 The Augmented Dickey-Fuller Tests

The ADF tests the null hypothesis that there exists a unit root in the time series (non-stationary time series), which is $H_0: \alpha=0$ against the alternative hypothesis, $H_1: \alpha < 0$, that the time series is stationary (no unit root). A rejection of the null hypothesis under these tests means the series does not have a unit root. The focus assumes that the regression model determine the independent and dependent variables for stationary and errors for the means to variance. Non stationary assessments establish the effect of High 2 for the low Durbin Watson statistics and F statistics for the establishment of the significant determination for determination of results in the economic senses (Verbeek, 2010). The focus of the assessments for the estimates in the consistence for the statical determinations

3.4.5 Phillip-Perron Unit test

The study used Philip Perron Unit root test based on the data that was attained. The decisions are made basing on the t-statistic, that is to say, if the absolute value of t-statistic is more than the critical values, then we reject the null hypothesis and conclude that the series is stationary. On the other hand, if the absolute value of the t-statistic is less e than the critical values, we fail to reject the null hypothesis and conclude that the series is non-stationary. The critical values for this t-statistic are given in Mackinnon (2012).

3.5 Co-integration

The variables used in the study were tested for co-integration in order to establish if there existed a long run relationship between the series. If the variables in equation (3.7) have stochastic trends and follow a common long term equilibrium association, then the variables are said to be co-integrated. Co-integration is a test for equilibrium between non-stationary variables integrated of the same order. The Johansen's co-integration procedure (1990) is adopted for this study because it involves the use of a

well-established, likelihood ratio statistics. The equation for testing co-integration using Johansen's procedure is as below;

$$y_t = \alpha + A_1 y_{t-1} + \dots + A_p y_{t-p} + \varepsilon_t \quad 3.8$$

Where y_t is k-dimensional vector of non-stationary variables, and ε_t is a vector of white noise residuals. By using the first difference operator Δ equation (11) can be rewritten as;

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^p T_i \Delta y_{t-i} + \varepsilon_t \quad 3.9$$

The rank of matrix Π determines the number of linear combinations of y_t that are stationary processes. If the rank of the matrix is r , Π can be factored as $\alpha\beta$, where the elements of α are the adjustment parameters in the error-correction model, and β contains the co integrating vectors. Johansen derives two test statistics for testing the co-integrating rank. The first is the maximum eigenvalue test while the second is the trace statistic.

If the variables in equation (3.7) turn out to be co-integrated, the error correction modeling approach is adopted to reveal the short and long run effect of external debt on economic growth.

3.6 Error Correction Model Specification

If evidence of co-integration is observed between financial development and economic growth, it would imply that there exists a short-term equilibrium relationship between them, so Error Correction Model would be estimated to evaluate the short run properties of the Co-integrated series because we are interested in uni-variate analysis. ECM leads to better understanding of the short-term interaction between different stationary series. It describes a system in which each variable is a function of its own lag, and the lag of the other variable in the system.

The Error Correction Model is used in this study to capture the short and long run impact of financial development on economic growth. The method involves developing a model from its Generalized form (over parameterized) to a specific form (parsimonious) using the Hendry modeling approach. It was also adopted in that it accounts for the speed of adjustment to equilibrium after a shock (ect_{t-1}).

The Error Correction Model (ECM) takes the form:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^j \alpha_{1i} \Delta Y_{t-i} + \sum_{i=1}^j \alpha_{2i} \Delta X_{it-i} + \alpha_3 ect_{t-1} + u_t \quad 3.10$$

Where the long run properties are derived from the proportionality between y_t and X_{it} . The above specification relates the short run change in the dependent variable Δy_t to the short run change in the explanatory variables X_{it} . This is called the impact effect (α_{2i}) but ties the change to the long run impact through a feed-back mechanism.

3.7 Granger Causality

Unlike other tests that simply identify the relationship between variables, Granger causality tests check the causal relationship. This test is used to determine whether one time series may be used to forecast another. Granger (1969), points out that causality is said to exist between two variables when a variable (X_1) Granger-causes (predicts) another variable (X_2) better than that variable can predict itself.

The statement " y_i causes y_i " is just shorthand for the more precise, but longwinded, statement, " y_i contains useful information for predicting (in the linear least squares sense), over and above the past histories of the other variables in the system" (Djoumessi, 2011). The test has the following pair of regression:

$$M2Y = \alpha_1 \sum_{t=1}^n \beta_1 M2Y_{t-1} + \sum_{t=1}^n GY_{t-1} + \varepsilon_{1t} \quad (3.11)$$

$$GY = \alpha_2 \sum_{t=1}^n \beta_2 GY_{t-1} + \sum_{t=1}^n M2Y_{t-1} + \varepsilon_{2t} \quad (3.12)$$

Where FD is financial development and GY is economic growth.

The first equation shows that current FD is related to past values of GY as well as past values of FD. And the second equation shows that the current GY is related to past values of itself as well as past values of FD. Granger causality test assumes that the 2 variables are stationary and that the error term need to be uncorrelated, also a careful selection of number of lags is important.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.0 Introduction

This chapter contains data presentation, interpretation and analysis. It begins with descriptive statistics in section one which test for normal distribution of variables then, present stationary test results in section two, it followed with Co-intergration test results in section three, Error Correction Models (ECMs) results in section four, then Granger causality test results in section five and finally the summary.

4.1 Descriptive Statistics

Table 4.1: Summary of the Descriptive Statistics for Variables in levels 1985 – 2015

Statistic	GDP	LFD	LRIR	LM2	LEXR	LINF	LTEX
Mean	17.932	1.734	2.279	2.74	5.735	3.546	15.55
Median	18.630	1.783	2.221	2.728	6.22	3.773	16.296
Maximum	23.159	3.206	3.922	3.232	8.188	6.314	20.985
Minimum	11.456	0.336	-1.221	2.283	1.902	-1.204	9.798
Std. Dev.	4.415	0.645	0.808	0.268	1.541	1.429	4.441
Skewness	-0.178	-0.244	-0.697	0.215	-0.351	-0.471	-0.109
Kurtosis	1.358	2.426	5.592	1.994	1.897	2.947	1.289
Jarque-Bera	15.516	3.123	47.65	6.586	9.436	4.895	16.36
Probability	0.0427	0.20987	0.0021	0.37105	0.8099	0.80656	0.28
Observations	29	29	29	29	29	29	29

Source: Author, L is Natural Logarithm, significance level 5%

Where:

RIR: Real interest rate

INF: Inflation rate

FD: Fiscal deficit

EXR: Exchange rates

M2: Financial Development Measurement

TEX: Total exports

μ : error term

Most of the study variables were normally distributed after being transformed into logarithm since; Jarque-Bera probability was not significant in most of the variables. This implied that series of the respective variables followed a normal distribution. Also, skewness was almost close to zero in most of the variables implying distribution was symmetrical around mean. With respect to peakedness of variables, most of them were flat than a normal distribution with kurtosis less than 3. Further, findings show that there is degree of variability in most of the variables under investigation as indicated by standard deviation (Table 4.1)

4.2 Stationary Test Results

Table 4.2: Stationary Test Results at Levels

Name of variable	Model specification	t-statistics	Critical values of 1%	Critical values of 5%
LGDP	Constant	-0.454	-3.634	-2.952
	Constant and trend	-2.183	-4.224	-3.532
LEXR	Constant	-0.926	-3.634	-2.952
	Constant and trend	-3.264	-4.224	-3.532
LINF	Constant	-1.443	-3.634	-2.952
	Constant and trend	-2.488	-4.224	-3.532
LRIR	Constant	-1.510	-3.634	-2.952
	Constant and trend	-3.534	-4.224	-3.532
LFD	Constant	-1.488	-3.634	-2.952
	Constant and trend	-1.661	-4.224	-3.532
LM2	Constant	-2.205	-3.634	-2.952
	Constant and trend	1.753	-4.224	-3.532
LTEX	Constant	-2.968	-3.634	-2.952
	Constant and trend	-3.057	-4.224	-3.532

Source: Own Author. In each case *t*- statistics values in absolute terms were less than critical values of 5%. Null hypothesis in each model case was not rejected implying all series of variables were non-stationary

After testing variables at their levels, the next step was differencing once all variables to turn data into stationary. Null hypothesis tested all the time, series of a variable has unit root (H0: has unit root) and alternative hypothesis series of a variable has no unit root and trend stationary (H1: has no unit root and trend stationary). Rejection of null hypothesis means series of a variable has no unit root and trend stationary. It appeared that after taking first difference the null hypothesis was rejected in each model in all

cases. This implied that variables were stationary and were integrated of order zero I (0) in all model cases since, at significance level of 5% the t statistics values were higher than critical values in absolute terms. Table 4.3 presented demonstrates stationary status of the series after differencing.

Table 4.3: Stationary Test Results after Taking First Difference

Statistic	Model specification	t-statistics	Critical values of 1%	Critical values of 5%	Stationary status
LGDP	Constant	-4.871	-3.641	-2.955	I(1)
	Constant and trend	-4.827	-4.233	-3.536	I(1)
LEXR	Constant	-8.228	-3.641	-2.955	I(1)
	Constant and trend	-8.543	-4.233	-3.536	I(1)
LINF	Constant	-6.155	-3.641	-2.955	I(1)
	Constant and trend	-6.156	-4.233	-3.536	I(1)
LIRR	Constant	-7.264	-3.641	-2.955	I(1)
	Constant and trend	-7.413	-4.233	-3.536	I(1)
LFD	Constant	-5.816	-3.641	-2.955	I(1)
	Constant and trend	-5.799	-4.233	-3.536	I(1)
LM2	Constant	-4.598	-3.641	-2.955	I(1)
	Constant and trend	-5.231	-4.233	-3.536	I(1)
LTEX	Constant	-15.728	-3.641	-2.955	I(1)
	Constant and trend	-17.089	-4.233	-3.536	I(1)

Source: Author. In all cases t- statistics values in absolute terms were greater than critical values of 5%. Null hypothesis in each case was rejected implying that all series of variables were stationary

4.3 Co-integration Test Results

After determining the order of integration, the study establishes whether the non-stationary variables are cointegrated. This was because, as pointed out by Engle and Granger (2011), even though individual time series are non-stationary, linear combinations of them can be, because equilibrium forces tend to keep such series together in the long run. When this happens, the variables are said to be cointegrated and error-correction terms exist to account for short-term deviations from the long-run equilibrium relationship implied by the cointegration.

4.4 Co-integration Analysis

In our study we check for co-integration using Johansen test. This test is based on maximum likelihood estimation and two statistics: maximum Eigen values and a trace statistic. The Null hypothesis is that there is no Co-integration. A co-integration test is purposely done to check if the variables have a long run association with each other. The results of the co-integration analysis have been presented in the table below.

Table 4.4: Showing Co-integration results of the variables under study

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.950896	233.7124	125.6154	0.0000
At most 1 *	0.867151	146.3118	95.75366	0.0000
At most 2 *	0.692664	87.77410	69.81889	0.0010
At most 3 *	0.533156	53.55954	47.85613	0.0132
At most 4 *	0.462343	31.46852	29.79707	0.0318
At most 5	0.236871	13.47301	15.49471	0.0986
At most 6 *	0.176555	5.633483	3.841466	0.0176

Source: Researcher 2019

The findings of Table 4.4 above from the Unrestricted Co-integration trace rank test using one (1) as the maximum lag length of the VAR model in equation (3.7) shows that there are 5 Co-integrating equations (LGDP, LEXR, LFD, LINF, LM2). Therefore; there is co-integration among Fiscal Deficit, Exchange Rate, Inflation, Population Growth and Gross Domestic Product. Comparing the p-value at none and the p-value at most 6, it is decided that we reject the null hypothesis of no co-integration at 0.05 level of significance. It is therefore concluded that there is a significantly long run relationship between the variables in the model.

Table 4.5: Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.950896	87.40055	46.23142	0.0000
At most 1 *	0.867151	58.53771	40.07757	0.0002
At most 2 *	0.692664	34.21456	33.87687	0.0456
At most 3	0.533156	22.09102	27.58434	0.2157
At most 4	0.462343	17.99551	21.13162	0.1300
At most 5	0.236871	7.839522	14.26460	0.3952
At most 6 *	0.176555	5.633483	3.841466	0.0176

Source: Researcher 2019

The results from Maximum Eigenvalue of 4.5 indicate that there are 3 Co-integrating equations. These findings confirm the results got from the first trace rank test hence by observing the p-values from the above table we reject the null hypothesis that there is a no Co-integration among these variables thus we conclude that there is a long run relationship between the variables in the study. Therefore, we shall now employ ECM to evaluate short run properties of the co-integrated series.

4.5 Estimation of the Error Correction Model and Results

Following Engle-Granger (2011) representation theorem, the third step involved an estimation of the error correction of the relationship and testing the adequacy of the estimated equation. An error correction model is specified:

$$\Delta LY_t = \beta_0 + \sum_{i=1}^k \beta_i \Delta LY_{t-i} + \sum_{i=0}^k \beta_i \Delta Z_{t-i} + \lambda_1 ECT_{-1} + \varepsilon_t \quad (4.1)$$

Where, Z_t a vector of co-integrated variables as is defined before and ECT_{-1} is the error-correction term lagged one period with λ_1 as a measure of the adjustment mechanism, is formulated and estimated.

Equation (4.1) represents the initial over-parametrized error correction model. Using Hendry's (1986) general-to-specific approach, we proceeded through a simplification process to make the model more interpretable and a certainly more parsimonious characterization of the data. The simplification process, guided by statistical rather than economic reasons, proceeded principally by setting certain parameters starting with those with "t" values between less than one and zero in absolute terms to zero. The model is also assessed in terms of the diagnostic tests such as residual autocorrelation, normality and heteroskedasticity, in addition to information criterion (Adams, 1997)

Using the general-to-specific modeling procedure, the analysis began with three lags for each variable, the dummy variable and the error correction term, ECT_{-1} . The overparametrized model was reduced until a parsimonious one was obtained. The estimation results of the parsimonious model are presented in Table 4.6

Table 4.6: Short run relationship Model (Parsimonious Model)

Dependent Variable: DGDG

Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	prop	t-statistics
C	0.015	0.004	0.001	3.426
DLGDP_1	0.344	0.103	0.031	3.311***
DLM2Y_2	0.229	0.054	0.013	4.195***
DLFD	-0.23	-0.049	-0.010	-4.779***
DLEXR	-0.090	0.028	0.008	3.198***
DLINF_1	-0.155	-0.084	-0.046	-1.825*
DLRIR	0.350	0.095	0.026	3.653***
DLTEX_1	0.612	-0.169	-0.047	-3.604***
DLM2	0.079	0.037	0.017	2.139**
ECT_1	-0.228	-0.087	-0.039	-2.617**
R-squared	0.783			
Adjusted R-squared	0.742			
F-statistic	6.527	Durbin-Watson stat		2.150
Prob(F-statistic)	0.000			

Notes: (i) The asterisk *, **, and *** indicates significance at the 10 percent, 5 percent and 1 percent levels respectively.

Comparing the general and the preferred model results, the reduction process eliminated most of the insignificant variables without losing valuable information. The regression results show that the goodness of fit is satisfactory (Adj. R-squared=0.74), implying that the regressors in the model explain about 74 percent of the variations in GDP during the 1980-2014 period. Thus, about 26 percent of GDP remain unexplained. The F-statistic of 6.53, with probability value of 0.0000 indicates that the overall model is highly significant. This implies a rejection of the null hypothesis that all the right hand

variables except the constant have zero parameter coefficients. The Durbin-Watson statistics (DW) does not point to the serious autocorrelation problem.

The results show that the error correction term (ECT_{-1}) in the model is correctly signed and is significant at the 5 percent level. This confirms our earlier results that the specified macroeconomic series are co-integrated. The error correction term (ECT_{-1}) coefficient of -0.228 implies that in each period, the level of GDP adjust by about 22.8 percent of the gap between the current level and the long run equilibrium level.

The coefficient for the first difference of fiscal deficits (LDFD) is significant at the one percent level and bears a prior expected negative sign. In line with the findings of Easterly *et al.*, (1992), the results imply a negative relationship between fiscal deficits and economic growth.

The effect of real exchange rate (LEXR) on growth rate is not statistically significant. This could have been due to high susceptibility of our export to price fluctuations which limits the gains arising out local currency depreciation. This finding is similar to that of Musinguzi and Obwona (2010) who found no significant relationship between real exchange rate and export growth rate but then contradicts a number of other findings. Studies in Ghana and India by Fosu (1992) and Sharma (2011) respectively have shown that real exchange rate has a significant negative relationship with export growth. According to Sharma, a fall in domestic prices due to exchange rate depreciation makes exports cheaper in the international markets resulting into their increased demand. Cline (2014) also had a similar study using pooled data for over 100 developing countries for the period 1981-2011. Ordinary Least Squares regression showed that the depreciation of real exchange rate increases export growth.

The total export growth rate (LTEX) of the previous period significantly impacts on the current period's export growth rate. This is due to the fact that the determinant factors of export growth in a given period sometimes spill over to another period affecting its growth as well. The growth rate of the previous three periods also has a significant

effect on the current period's export growth rate. This finding is consistent with that of Musinguzi, Obwona and Stryker (2010) who found out that lagged export growth rate has a statistically significant impact on current period's growth rate.

Inflation (LINF) rate has a significant and negative effect on growth rate. The effect is statistically significant at 10% level. Lagged inflation level significantly affects the current period's economic growth rate. This finding is consistent with that of Ndulu and Lipumba (1990) who while studying opportunities and constraints to trade and their influence on growth and development of African economies, established that foreign prices of primary commodities significantly affect the export growth of countries involved in their production. Edwards and Golub (2014) investigated the determinants of export supply in South Africa and found out that foreign prices have a highly significant impact on manufacturing exports growth in South Africa.

The significant positive influence of the first difference of the financial development proxy (LM2Y) on economic growth implies that financial development has a positive impact on the real GDP growth. This finding follows from the wide range of financial assets that have been made available to the public through a wide network of commercial bank branches since the liberalization of the financial sector in 1992. Moreover, the finding is in line with the arguments of Mckinnon's (1973) inside money model and the financial deepening approach by Edward Shaw (1973), as a catalyst to growth through investment in high yielding projects resulting in an increase in real income.

4.7 Results of Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
LM2 does not Granger Cause LGDP	29	0.50015	0.6126
LGDP does not Granger Cause LM2		7.42248	0.0031

Source: output from E-views7

From table 4.7, the f-statistics is statistically significant, therefore the null hypothesis is rejected and the alternative hypothesis which says LGDP does granger cause LNM2 is accepted. This implies that there is a unidirectional causality running from economic growth to financial development. This indicates that the demand following hypothesis holds for Uganda.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter provides summary of findings, conclusions and recommendations.

5.1 Discussion of Findings

The main objective of the study was to analyze the existence of co integration and the short run relationship between financial sector development and economic growth in Uganda 1985-2015. To check the co-integration between the two variables, it is mandatory to prove the stationarity of all variables. As such in the study all variables are stationary at same order of integration and Johansen co integration testing approach also found out existence of the long run co integration among variables.

In the model when Private credit by deposit money bank and other financial institutions to third was taken as dependent variable, the value of error correction term is negative and statistically significant. This implies as real GDP growth rate is the cause for the development of private credit by deposit money bank and other financial institutions to the GDP. This value also implies as our model was convergent towards the long run equilibrium. In the model the short run deviation from equilibrium will be converged towards the long run equilibrium.

Furthermore, when Real GDP growth rate was taken as dependent variable, the value of error correction term is negative and statistically also significant. This implies in the long run private credit by deposit money bank and other financial institution to the GDP is the cause for the development of real GDP growth rate. In the model the short run deviation will be corrected towards the long run equilibrium in the long run. Thus, this empirical result show that private credit by deposit money bank and other financial institution to the GDP and real GDP growth rate have a long-term relationship. This finding support Greenwood & Jovanovic, 1990 and Luintel & Khan, 1999 finding.

5.2 Conclusion

The econometric results reveal that the major determinants of real GDP growth in Uganda include past real GDP, financial depth ratio, fiscal deficits, total credit to the economy, exchange rates and total exports. Moreover, there is significant evidence that financial sector reforms adopted in the early 1990s have generally had positive contribution to the real GDP in Uganda.

The findings revealed that there are 5 Co-integrating equations (LGDP, LEXR, LFD, LINF, LM2). Therefore; there is co-integration among Fiscal Deficit, Exchange Rate, Inflation, Population Growth and Gross Domestic Product. Comparing the p-value at none and the p-value at most 6, it is decided that we reject the null hypothesis of no co-integration at 0.05 level of significance. It is therefore concluded that there is a significantly long run relationship between the variables in the model.

Comparing the general and the preferred model results, the reduction process eliminated most of the insignificant variables without losing valuable information. The regression results show that the goodness of fit is satisfactory (Adj. R-squared=0.74), implying that the regressors in the model explain about 74 percent of the variations in GDP during the 1980-2014 period. Thus, about 26 percent of GDP remain unexplained. The F-statistic of 6.53, with probability value of 0.0000 indicates that the overall model is highly significant. This implies a rejection of the null hypothesis that all the right hand variables except the constant have zero parameter coefficients. The Durbin-Watson statistics (DW) does not point to the serious autocorrelation problem.

However the f-statistics is statistically significant, therefore the null hypothesis is rejected and the alternative hypothesis which says LGDP does granger cause LNM2 is accepted. This implies that there is a unidirectional causality running from economic growth to financial development. This indicates that the demand following hypothesis holds for Uganda.

5.3 Recommendations

In terms of policy implications, the findings of the study show that financial sector is crucial for the growth of the economy. Therefore, policies that promote financial development and intermediation should be promoted. Government can for instance improve intermediation by reducing taxation on the financial sector and give incentives for its development. An integration of the fragmented financial markets is highly desirable.

The current experiment with financial liberalization and restructuring that are designed to improve the efficiency of financial intermediaries will lead to economic growth only if credit to the productive private sector enterprises increase. This therefore calls for dismantling any impediments to increased availability of credit to the private sector. There is for example, need to cut down the bureaucratic procedures in the process of lending and depositing money. It should be realized that this among other factors make financial intermediation costly and are responsible for the narrow sizes of financial assets availed by financial institutions. To the problem of high default rates, in addition to commercial courts or tribunals that have been instituted to speedily deal with enforcement of loan contracts, commercial banks need to have a mechanism of sharing information on defaulters. This will close the information gap problem, as a result of which, adverse selection and moral hazard problems have been thriving.

In addition, empirical findings with respect to fiscal deficits point to one important fact fiscal discipline. The negative influence of fiscal deficits on growth suggests that fiscal deficits must be minimized. Therefore, the current policy of running cash budgets among other policy measures should be applauded. Moreover, to the extent that the structural changes, financial sector liberalization in particular, enhance economic growth, then, for economic growth to exhibit rising trends, the government should continue with financial liberalization policy in particular. Emphasis should be put on structural reforms such as promoting a competitive and viable domestic banking system, with an adequate regulatory and supervisory framework. This should be

complemented by macroeconomic stability that is, fiscal deficits, rapidly depreciating exchange rate and high inflation should be put in check. This calls for appropriate sequencing of the structural reforms. In implementing such reforms, it is wiser to move gradually and to improve economic fundamentals first before complete deregulation.

The fact the financial sector has to be complemented by other factors to enhance economic growth, additional policy implications can be drawn. Specifically, policies which harness the growth of export sectors should be encouraged. Government should establish incentives for the domestic entrepreneurs, particularly those in the export sector. Efforts should also be done to create value addition in the exports as this would reduce the cost of importation and increase its competitiveness at the international level.

Since the f-statistics is statistically significant, therefore the null hypothesis is rejected and the alternative hypothesis which says LGDP does granger cause LNM2 is accepted. This implies that there is a unidirectional causality running from economic growth to financial development. This indicates that the demand following hypothesis holds for Uganda.

5.4 Contributions to Knowledge

As the causality between private credit by deposit money bank and other financial institutions to the GDP growth rate have long-run relationship in which the both variables are supplementary to each other; it is advisable for the decision makers of the country to exert an effort to enhance both variables for the benefit of the community at large. Accordingly, financial development is one of the enabler for economic growth. It is recommendable for Uganda's decision makers to make decisions that facilitate and encourage the development of the deposit money bank assets to the GDP to sustain this benefit for a long time. Generally, the finding of the study claims the government to

create conducive environment for the development of finance to sustain its contribution to economic growth.

5.5 Limitations of the Study

This study uses annual time-series data to examine the financial development - economic growth relationship for Uganda. The following areas are suggested for further research. This study is a single-country study, with the applications of the study limited to the country studied (Uganda). A further extension of this research could be to conduct a similar study for other countries, particularly other developing countries.

Another limitation is the use of proxies to measure financial development. Various studies have used different proxies for financial development leading to results not being comparable and hence no consensus has been reached regarding the causality relationship between financial development and economic growth.

REFERENCES

- Adjasi, C.K. & N.B. Biekpe (2015), Stock Market Development and Economic Growth: The Case of Selected African Countries, *African Development Review* 18(1): 144-161.
- Ang, J. B. (2013). What are the Mechanisms Linking Financial Development and Economic Growth in Malaysia? Discussion paper 34, Department of Business and Economics, Monash University: Caulfield East, VIC 3145 Australia.
- Ang, J.B. (2012), *Financial Development and Economic Growth in Malaysia*. Routledge.
- Arestis, P and Demetriades, P. (2014). —Financial Development and Economic Growth: Assessing the Evidence||. *Economic Journal* 1(7), pp. 783-799
- Asai, M. & T. Shiba (2011), The Japanese Stock Market and the Macroeconomy: An Empirical Investigation, *Financial Engineering and the Japanese Markets* 2(3): 259-267.
- Atje, Raymond, & Boyan Jovanovic (2011). Stock Markets and Development. *European Economic Review*, 37-#2/3, pp. 632-40.
- Barro, Robert J. (2012). Economic Growth in a Cross-Section of Countries. *Quarterly Journal of Economics*, 105-#2, pp. 407-443.
- Beck, T. (2012). Financial Development and International Trade: Is There A Link? *Journal of International Economic* 57, 107-131.
- Beck, T. & R. Levine (2014), Stock Markets, Banks, and Growth: Panel Evidence, *Journal of Banking & Finance* 28(3): 423-442.
- Beck, T., R. Levine & N. Loayza (2010), Finance and the Sources of Growth, *Journal of Financial Economics* 58(1): 261-300.

- Bencivenga, Valerie R., & Bruce D. Smith (2012). Financial Intermediation and Endogenous Growth. *Review of Economic Studies*, 58-#2, pp. 195-209.
- Bencivenga, Valerie R., and Bruce D. Smith (2011), Some Consequences of Credit Rationing in and Endogenous Growth Model. *Journal of Economic Dynamics and Control*, V.17, pp. 97-122.
- Boyd, J.H., Levine, R., Smith, B.D. (2011), The Impact of Inflation on Financial Sector Performance, *Journal of Monetary Economics*, 47(2), 221–248.
- BRASOVEANU, L.O., D. Victor, C. Delia & S. Andreea (2012) 'Correlations between Capital Market Development and Economic Growth: The Case of Romania'.
- Brownbridge, M. & Gockel, A.F. (2011).—The Impact of Financial Sector Policies on Banking in Ghana||. *IDS Working Paper*, No. 38, Institute of Development Studies, Sussex University
- Calderon, C., Liu, L. (2013), The Direction of Causality Between Financial Development and Economic Growth, *Journal of Development Economics*, 72(1), 321-334.
- Cameron, R.E. (2011), *A Concise Economic History of the World: From Paleolithic Times to the Present*. Oxford University Press.
- Christopoulos, D.K. & E.G. Tsionas (2014), Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests, *Journal of Development Economics* 73(1): 55-74.
- Demetriades, P.O. & K.A. Hussein (2011), Does Financial Development Cause Economic Growth? Time-Series Evidence from 16 Countries, *Journal of Development Economics* 51(2): 387-411.

- Demetriades, P.O. & K.A. Hussein (2011), Does Financial Development Cause Economic Growth? Time-Series Evidence from 16 Countries', *Journal of Development Economics* 51(2): 387-411.
- Demirgüç-Kunt, A. & Huizinga, H. (2010), Determinants of commercial bank interest margins and profitability: some international evidence, *World Bank Economic Review*, 13(2), pp 379-408.
- Djoumessi, E. C. K. (2011). Financial development and economic growth: A comparative study between Cameroon and South Africa. Unpublished MA thesis. University of South Africa.
- Engle, R.F. & Granger, C.W.J. (2011), Cointegration and error correction: representation, estimation and testing, *Econometrica*, 55, 251–276.
- Engle, R.F. and Yoo, B.S. (2011), Forecasting and testing in cointegrated systems, *Journal of Econometrics*, 35, 143–159.
- Enisan, A.A. & A.O. Olufisayo (2011), Stock Market Development and Economic Growth: Evidence from Seven Sub-Sahara African Countries, *Journal of economics and business* 61(2): 162-171.
- Fry, Maxwell J. (1978). Money and Capital or Financial Deepening in Economic Development?. *Journal of Money, Credit, and Banking*, 10-#4, pp. 464-475.
- Fry, Maxwell J. (1989). Financial Development: Theories and Recent Experience, *Oxford Review of Economic Policy*, 5-#4, pp. 13-28.
- Gallup, J.L, J. Sachs & A.D, Mellinger (1988), Geography and Economic Growth. *Paper prepared for the Annual Bank conference on Development Economics*, Washington, D.C., April 20-21

- Granger, C.W.J. (1969), Investigating Causal Relationships by Econometric Models and Crossspectral Models. *Econometrica*, 37(3), 424-438.
- Greenwood, J., Smith, B. (1997), Financial markets in Development, and the Development of Financial Markets, *Journal of Economic Dynamics and Control*, 21(1), 145-181.
- Gujarati, D. N. (2013). *Basic Econometrics 4th edition*. McGraw Hill companies. New York: USA.
- Gupta, Kanhaya L. (1986). Financial Development and Economic Growth in India and South Korea. *Journal of Economic Development*, pp. 41-62.
- Harrod, R. F (1939). Any essay in Dynamic theory. Blackwell Publishing for the Royal Economic Society. *Economic Journal* 48, Issue No.192, pp 14-33.
- Hendry D F (1986), Economic Modeling with Integrated Variables, *Oxford Bulletin of Economics*, No. 3.
- Hondroyannis, G., S. Lolos & E. Papapetrou (2014), Financial Markets and Economic Growth in Greece, 1986–1999, *Journal of International Financial Markets, Institutions and Money* 15(2): 173-188.
- Hussain & Chakraborty (2012). Causality between Financial Development and Economic Growth: Evidence from an Indian State. *The Romanian economic Journal*, XV No.45, pp 35-49.
- Hussein, K. A. (1999). Finance and Growth in Egypt. University of Kent, Department of Economics, Canterbury CT2 7NP. Retrieved <http://www.iceg.org/NE/projects/financial/growth> accessed on 23/8/2014.
- Johannes, A. T., Njong, A.M., Cletus, N. (2011), Financial Development and Economic Growth in Cameroon 1970-2014, *Journal of Economics and International Finance*, 3(6), 367-375.

- Johansen, S. (1988), Statistical Analysis of Co-integrating Vectors, *Journal of Economic Dynamic Control*, 12(2-3), 231-254.
- Johansen, S. & Juselius, K. (1990), Maximum likelihood estimation and inference on cointegration with application to the demand for money, *Oxford Bulletin of Economics and Statistics*, 52, 169–210.
- Kalima B M (2011), *Financial Markets and Economic Growth in Zambia*, Unpublished MA.(Economics) Dissertation, University of Botswana.
- Kasekende L A & Atingi-Ego M (2011), Financial Liberalisation and its Implications for the Domestic Financial System: The Case of Uganda. Final Report Presented at the AERC Workshop, Nairobi 25- 30 May 2011.
- Kilimani, N. (2011), The Link Between Financial Development and Economic Growth in Uganda: A Causality Test, A paper presented at the Centre for Study of African Economies (CSAE) Conference, 22-24 March 2011.
- King, G. R. & Levine, R. (2011), Finance and growth: Schumpeter might be right, *The Quarterly Journal of Economics*, 108, 717–737.
- King, R.G & Levine, R. (2011b), Finance entrepreneurship and growth, *Journal of Monetary Economics*, 32, 513–542.
- Kuznets S., Economic Growth and Income Inequality, *American Economic Review* 45 (1), (1955):1-28.
- Levine, R. (1997), Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature*, 35(2), 688-776.
- Levine, R. (1999), Law, Finance and Economic Growth, *Journal of Financial Intermediation*, 8(1), 36- 67.

- Levine, R. (2014), Finance and Growth: Theory and Evidence, national Bureau of Economic Research, Working Paper 10766, September 2014, <http://www.nber.org/papers/w10766>, accessed on 19 July 2012.
- Levine, R. & Zervos, S. (2011), Stock market development and long-run economic growth, *World Bank Economic Review*, 10(2), 323–339.
- Levine, R., Loayza, N., Beck, T. (2010), Financial Intermediation and Growth Causality and Causes, *Journal of Monetary Economics*, 46(1), 31-77.
- Lucas, R.E. (1988), On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3-42.
- Lyons S E & Murinde V (1994), Cointegration and Granger Causality Testing of Hypotheses on Supply-Leading and Demand-Following Finance, *Economic Notes*, 23, No. 2, pp.308-316.
- Mackinnon, J.G. (2012), Critical values for cointegration tests, in: R.F. Engle and C.W.J. Granger (ed.), *Long-run Economic Relationships: Readings in Cointegration*, Oxford University Press, Oxford.
- Maghanga, M. & W. Quisenberry (2015), The Role of Uganda Securities Exchange in the Economic Growth of Uganda: An Econometric Analysis, *International Journal of Econometrics and Financial Management* 3(3): 131-141.
- McKinnon, R.I. (1973), *Money and Capital in Economic Development*. Washington D.C. Brookings Institution.
- Odedokun, M.O. (2011). Alternative Econometric Approaches for Analysing the Role of the Financial Sector in Economic Growth: Time Series Evidence from LDCs. *Journal of Development Economics*, 50-#1, pp. 119-146.

- Odhiambo, N.M. (2010), Finance-Investment-Growth Nexus in South Africa: An ARDL-Bounds Testing Procedure, *Economic Change and Restructuring* 43(3): 205-219.
- Osei, V. (2014), Does the Stock Market Matter in Ghana? A Granger-Causality Analysis, *Bank of Ghana, WP/BOG-05/13*.
- Patrick, H. T. (1966), Financial development and economic growth in underdeveloped countries, *Economic Development and Cultural Change*, 14, 174–189.
- Pesaran, M.H. & R. Smith (2011), Estimating Long-Run Relationships from Dynamic Heterogeneous Panels, *Journal of Econometrics* 68(1): 79-113.
- Rahman, M.A. (1968), Foreign Capital and Domestic Savings: A Test of Haavelmo's Hypothesis with Cross-Country Data, *The review of economics and statistics*: 137-138.
- Raj, Rev Dr J Felix & S. Roy (2014), Empirical Evidence on the Relationship between Stock Market Development and Economic Growth: A Cross-Country Exploration in Asia, *Analytical Issues in Trade, Development and Finance*, pp. 395-403. Springer.
- Rajan, R., Zingales, L. (1998). Financial Dependence and Growth, *American Economic Review* 88, 559-586.
- Rajan, R.G., & L. Zingales (2013), Financial Dependence and Growth, *American Economic Review*, 88: 559-586.
- Robinson, J. (1952), The generalization of the general theory, in: *The Rate of Interest and Other Essays*, MacMillan, London, 67–142.
- Rousseau, Peter L., & Paul Wachtel (2010). Equity Markets and Growth: Cross-Country Evidence on Timing and Outcomes, 1980-2011. *Journal of Banking and Finance*; 24, pp.1933-1957.

- Schumpeter, Josef A. (1912), *The Theory of the Economic Development: An Inquiry into Profits, Capital, Credit, Interest and Business Cycle*, Harvard Press, Cambridge.
- Schumpeter J. (1911), *The Theory of Economic Development*, Cambridge, MA: *Harvard University Press*.
- Shaw E. S., (1973), *Financial Deepening in Economic Development*, New York, Oxford University Press.
- Shaw, E. (1973), *Financial Deepening in Economic Development*, New York: Oxford University Press
- Shaw, E.S. (1973), *Financial Deepening in Economic Development*, Oxford University Press
- Shaw, Edward S. (1973). *Financial Deepening in Economic Development*, New York: Oxford University Press.
- Singh, A. (1997). Financial Liberalisation, Stock Markets and Economic Development. *Economic Journal* 107, 771-782.
- Smith & Starr (2011), Transaction Costs, Technological Choice and Endogenous Growth, *Journal of Economic Theory*, Vol. 7, pp. 153-177.
- Smith, W.T. (2011), Taxes, Uncertainty, and Long-Term Growth, *European Economic Review* 40(8): 1647-1664.
- Vacu, N.P. (2013), *Impact of Stock Market Development on Economic Growth: Evidence from South Africa*.
- Van Nieuwerburgh, S., F. Buelens & L. Cuyvers (2015), Stock Market Development and Economic Growth in Belgium', *Explorations in Economic History*, 43(1): 13-38.

- Wachtel, P. (2013), How Much do we really Know about Growth and Finance?, *Economic Review-Federal Reserve Bank of Atlanta* 88(1): 33-48.
- Wang, X. (2010), The Relationship between Stock Market Volatility and Macroeconomic Volatility: Evidence from China, *International research journal of finance and economics* 49: 149-160.
- Yartey, C.A. & C.K. Adjasi (2013), *Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges*. International Monetary Fund.

APPENDIX 1: DATA USED IN THE STUDY

YEAR	LEXR	LFD	LTEX	LRIR	LINF	LM2	LGDP
1985	2.946939	2.778288	3.564732	2.773589	4.407163	9.45	5.610422
1986	2.993895	2.946126	3.591206	1.992357	4.404284	9.72	5.660616
2011	3.029328	2.973178	3.599658	1.748419	4.487526	9.99	5.689424
1988	2.99295	2.846564	3.568408	0.60176	4.524063	10.26	5.721267
1989	3.10017	2.961293	3.663415	1.22773	4.60517	10.53	5.748753
1990	3.040943	2.99143	3.77582	2.798994	4.675728	10.83	5.817404
2012	3.085065	3.038574	3.845401	2.760114	4.735303	11.14	5.864509
1992	3.124488	3.162011	4.029953	2.826104	4.849086	11.47	5.91441
2011	3.173833	3.117198	4.075947	3.049099	4.971456	11.82	5.950824
1994	3.146559	3.291716	4.054963	2.859572	5.010451	12.18	5.974188
2011	3.194264	3.278065	4.062731	2.729644	5.181752	12.55	6.004708
2011	3.027628	3.386998	4.043418	2.879901	2.748058	12.93	6.319556
1997	2.946022	3.433404	4.018142	2.854062	2.931083	13.32	6.300673
1998	2.80828	3.5978	3.968987	2.279369	3.172714	13.74	6.260176
1999	2.829537	3.612679	4.288519	1.618449	3.551006	14.17	6.232164
2010	2.937736	3.638007	4.266421	2.029462	3.804208	14.65	6.227828
2011	3.062717	3.743185	4.273129	1.691251	3.819632	15.15	6.241958
2012	2.773155	3.577716	4.048512	1.989902	3.904562	15.7	6.254959
2013	2.733582	3.648647	3.990041	-0.34159	4.012176	16.26	6.233179
2014	2.752081	3.578149	3.889721	1.625485	4.077238	16.85	6.239679
2014	2.746721	3.577132	3.875199	2.4981	4.13307	17.44	6.23667
2015	2.815936	3.560044	3.976106	0.954884	4.228198	18.04	6.216533
2013	2.898756	3.562203	4.024402	1.658803	4.283998	18.65	6.227099
2012	2.847051	3.641759	4.010468	1.786645	4.303421	19.28	6.205706
2011	2.762425	3.664155	3.99143	2.532869	4.397054	19.91	6.207569
2010	2.78866	3.671912	4.08559	2.507946	4.507021	20.55	6.230304
2011	2.928476	3.661167	4.166338	1.550235	4.60517	21.2	6.260754

2012	2.948661	3.681563	4.173528	2.292967	4.740171	21.87	6.295344
2013	2.963552	3.745179	4.16632	2.566455	4.833286	22.55	6.336236
2014	2.967105	3.750453	4.239237	2.639663	5.0663	23.27	6.324705
2015	2.978721	3.787321	4.121119	2.161322	5.154623	24.04	6.324934