Relationship between Financial Deepening and Economic Growth for selected countries in Africa

by

Tafadzwa Musiyazviriyo 2126490

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The Graduate School of Business Administration, Wits Business School, University of the Witwatersrand

Supervisor: Dr Chengete Chakamera

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ABSTRACT

The financial sectors of African countries are still underdeveloped relative to other regions, and there is little academic research on how this can be improved. Given the potential for economic growth, fuelled by further financial sector development, the call is for African policymakers to prioritise financial deepening policies to stimulate economic growth. The purpose of the study was to investigate the relationship between financial deepening and economic growth in 51 African countries. This research sought to achieve three objectives: (i) whether financial depth for the African countries between 1993 and 2017 had a significant impact on economic growth; (ii) whether the effect is positive or negative; and (iii) determining the size of the effect. The assumption was that financial depth in the African countries positively influences economic growth. The study also sought to ascertain whether the direction of causality is unidirectional or bi-directional. This study assumed that the direction of causality is bi-directional.

Using the two-step generalised methods of moments (GMM), the study assessed the relationship between financial deepening and economic growth in 51 African countries from 1993 to 2017. The findings reveal that there is a significant negative relationship between financial deepening and economic growth. The Granger causality tests applied further show that there is a bi-directional relationship between financial deepening and economic growth.

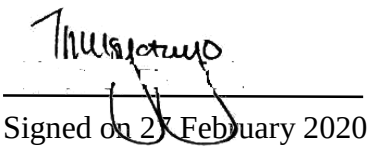
The main conclusion from the study is that there is a multidimensional approach opportunity for African countries to develop their financial sectors further to stimulate economic growth. Possible interventions in policy can be to create an environment that aims to encourage either a demand-following and/or a supply-leading approach to financial sector development. Both strategies will result in financial deepening and may stimulate economic growth since there is a bi-directional relationship between financial deepening and economic growth.

Keywords: Financial deepening; Economic growth, GMM, Causality, Africa

DECLARATION

I declare that this research is my work. The research is a partial fulfilment of the requirements for the degree of Master of Management in Finance and Investment at the Wits Business School, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Tafadzwa Musiyazviriyo



Signed on 27 February 2020

DEDICATION

To my family

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LIST OF ACRONYMS AND ABBREVIATIONS

2SLS	Two-Stage Least Squares
ADF	Augmented Dickey-Fuller
ASEAN	Association of Southeast Asian Nations
CV	Coefficient of Variation
DH	Dumitrescu-Hurlin
FDI	Financial Depth Index
GDP	Gross Domestic Product
GMM	Generalised Methods of Moments
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PwC	PricewaterhouseCoopers
SADC	Southern African Development Community
TFP	Total factor productivity
WDI	World Development Indicators

CHAPTER ONE:
INTRODUCTION

1.1. Background

The financial sectors of African countries are still underdeveloped, and there is little academic research on how this can be improved (Allen et al., 2014). Given the potential for further financial sector development in Africa, and its possible impact on economic growth, this study explores the relationship between financial deepening and economic growth. Empirical studies show that African countries with developed capital markets have grown faster than those without (Ngare, Nyamongo, & Misati, 2014; Paul, Japheth, & Linus, 2019). However, Gourène, Mendy, and Diomande (2019), PwC (2018), and Smith, Jefferis, and Ryoo (2002) found that African capital markets are relatively shallow on volumes and capitalisation compared to developed nations, which is not enough support for the desired economic growth rate. A few studies (Chikalipah & Makina, 2019; Ojah & Kodongo, 2015), as this study, focus on financial deepening mechanisms other than capital markets development as a realistic finance option best suited for Africa. This empirical study uses longitudinal/panel data for 51 African countries, a developing region where the results of the study can provide a base for further study and potentially influence policies that may have a significant impact on economic growth.

Calderon, Kambou, Korman, Kubota, and Cantu Canales (2019), in a recent World Bank study, found that African economic growth has slowed from 2.5% in 2017 to 2.3% in 2018 and is set to trend further downwards. It is now pressing that African governments innovate and formulate relevant financial reform policies in order to accelerate economic growth.

This study seeks to explore the role of financial deepening as a mechanism to stimulate economic growth. Alrabadi and Kharabsheh (2016) broadly define financial deepening as the increase in the supply of a variety of financial assets accessible to all levels of the population in the economy. Ajija and Rizal (2019) depict financial deepening as an increase in companies in the financial services industry offering various financial products to increase capital mobility at optimal cost and risk sharing, thus affecting economic growth. Nwaolisa and Cyril (2019) take the definition a step further to portray financial deepening as the increase in competitive efficiency through improved economic conditions for financial markets to invest, using mobilised savings. Guru and Yadav (2019) mention that the

development of financial systems considers stability, magnitude and proficiency of financial markets, together with increased access to the markets, resulting in optimum capital allocation. On the other hand, some writers, such as Salas (2018), simplify the definition of financial deepening to the ease of raising capital.

Finance reforms as a supply-leading approach to stimulate economic growth, as suggested by the early work of Schumpeter (1911) and later validated by King and Levine (1993a), are most applicable to this study. These authors state that efficient markets created by financial deepening will result in economic growth, contrary to the demand-following school of thought that financial markets develop in reaction to economic growth (Svirydzenka, 2016). Based on prior theoretical and empirical evidence, this study aims to investigate the relationship between financial depth and economic growth. The focus is for African countries to look within their economies to deepen financial systems to realise more investment capital to grow their economies, in line with findings by Ikhide (2015), who concluded that capital injection leads to economic growth.

Scientific studies on the positive connection of finance to economic development originate back to the work of Schumpeter (1911). Schumpeter's emphasis was on the role of financial markets rallying and pooling savings to invest in worthy investments identified by the market activity and risk management thereof. Later writers have expanded on this view, empirically itemising the components that constitute financial development. King and Levine (1993a), in their study, introduce four (4) financial indicators to enrich the definition of financial development. They first create a measure of financial depth, as being the ratio of liquid assets to Gross Domestic Product (GDP), then further distinguish the formal firms providing this intermediation. In Sahay et al. (2015), the authors acknowledge that in addition to banks, there are now other significant players and financial products that can be accessed to source capital, prompting the exploration of new broader proxies to define financial development. In particular, financial depth indices, such as Private sector credit to GDP, Pension fund assets to GDP, Mutual fund assets to GDP, and Insurance premiums, life and non-life to GDP, capture the new dynamics of modern financial systems.

Gurley and Shaw (1955), in their study, found that wealth holders use diverse financial intermediaries to choose assets to include in their portfolios. The financial intermediaries then direct the surplus savings to deficit consumers who, through their consumption activities, fuel economic growth. Xu (2000) found that the financial depth of an economy could be observed

by the degree of liberalisation of the financial markets, where the increase of financial assets introduced by increased financial intimidation brings about market efficiency. Some studies claim access is more important, because for depth to improve, products and services must be accessible, yet some say it is the efficiency that brings confidence into the system for the masses to take up services and/or products. Financial deepening can be a catalyst for economic growth, as it mobilises savings by providing greater participation in a developed financial system. For developing nations, intermediary financial development becomes a source of economic growth (Khan, 2017).

Various empirical studies have observed mixed results on the impact of financial depth on economic growth. Among other factors, countries tend to have numerous financial systems at different stages (Awili & Ahmed, 2019). Furthermore, critical distinctions in studies conducted, such as proxies used to measure financial depth, the study's subject country's development phase, and period of study, have revealed different conclusions about the impact of the level of financial depth on economic growth. King and Levine (1993b), and later Alrabadi and Kharabsheh (2016), have used a macro view of market capitalisation to GDP as a proxy for financial deepening. However, some studies, for instance Guru and Yadav (2019), have taken a microscopic angle of looking at the efficiency of financial intermediaries by picking banking sector indicators or a combination of both macro and micro indicators.

The discussion on finance and economic growth continues to be an unsettled debate, with some findings feeding into the established theories that there is a negative relationship between finance and growth (Robinson, 1952), and found that there is no link between finance and economic growth. Ikhide (2015) found that the relationship between finance and growth breaks down in developed countries and holds a positive relationship in developing countries. Fosu (2014) and Seven and Coskun (2016) observe that most of the African countries are developing, and therefore it is critical to scrutinise which components of financial deepening can present an opportunity to encourage economic growth.

1.2. Problem Statement

Many countries in Sub-Sahara Africa are experiencing low economic growth (represented by GDP per capita) and African governments are struggling to find solutions that stimulate optimal economic growth. According to the World Bank's 2019 economic outlook report,

Africa's economy is growing at a sluggish 2.3% per annum, which is not enough to eradicate poverty by the anticipated 2030 target as per the sustainable development goals (World Bank, 2019). Recently, financial deepening has been identified as a possible solution to stimulate economic growth (Ncanywa & Mabusela, 2019; Nwaolisa & Cyril, 2019), even though financial markets in Africa are still shallow (Gourène et al., 2019; PwC, 2018). The major problem of this study is to determine whether financial deepening can stimulate economic growth in Africa. This is a matter of concern, especially given that from an empirical perspective, a consensus has not been reached regarding the impact of financial deepening on economic growth. For instance, Ndebbio (2004), Nwaolisa and Cyril (2019), and Ncanywa and Mabusela (2019) show different results in the African context. In view of these results, the relationship between financial depth and economic growth demands further interrogation. Following this main problem, there is another accompanying sub-problem regarding the proxies of financial depth that have been used in the literature. Different proxies may generate diverse outcomes, leading to different conclusions regarding the influence of financial depth on economic growth. The study will focus on the International Monetary Fund's (IMF) financial institutions' depth composite index as a proxy for financial deepening. The index is a well-balanced composite of various proxies that have been used in various studies as proxies for finance. As a sub-problem, the study will also look at the direction of causality between financial depth and economic growth, which is not clear in the current literature. Robinson (1952) found that the supply-leading theory is for developing economies, such as in Africa, where financial deepening by an increase in the supply of financial products drives economic growth. On the other hand, Patrick (1966) found that supply-leading and demand-following co-explain the financial development-growth link. Cecchetti and Kharroubi (2015), in their study, found that financial development has an impact on growth in two directions, depending on the level of financial development.

It is of importance for African governments to assess the impact of financial deepening on economic growth in order to modernise financial systems in an African context. Financial deepening is a crucial constituent to economic growth. Broader efficient financial systems promote intermediary activity, increasing the quantity and quality of financial institutions offering a variety of financial services that optimise the allocation of resources and increase productivity. Pradhan, Arvin, Bahmani, Hall, and Norman (2017), in their study of the Association of Southeast Asian Nations (ASEAN) Regional Forum finance-growth nexus,

found positive results of the modernisation of financial systems, coupled with relevant policies on economic growth.

Given the highlighted problems, it is vital in this study to examine the finance-growth nexus and financial deepening in the modern African context in order to unlock strategies to simulate ample economic growth. This is also expected to add to the knowledge gap in the current literature.

1.3. Research Questions

- Does financial depth in Africa have a significant effect on economic growth?
  This research question seeks to address three issues: (i) whether financial depth for the African countries between 1993 and 2017 had a significant impact on economic growth; (ii) whether the effect is positive or negative; and (iii) determining the size of the effect. *The assumption is that financial depth in the African countries positively influences economic growth*. In line with the above research question, this study considers the following hypotheses:
  H_0: Financial depth has no positive impact on economic growth in Africa.
  H_1: Financial depth has a positive impact on economic growth in Africa.

- Is there a bi-directional causal relationship between financial depth and economic growth?
  This research seeks to apply techniques that are meant to detect the direction of causality, that is determining whether the direction of causality is unidirectional or bi-directional. *This study assumes that the direction of causality is bi-directional*. In line with the above research question and the assumption, this study considers the following hypotheses:
  $H_{0:}$ A bi-directional causality does not exist between financial depth and economic growth.
  H_1: A bi-directional causality does exist between financial depth and economic growth.

1.4. Research Purpose

The purpose of this study is to analyse the relationship between financial depth and economic growth in Africa. It is requisite in Africa to rethink ways to accelerate economic growth, which can lower poverty levels. The research expects not only to influence economic policy, but also to contribute to the body of knowledge for future scholars scrutinising the effect of financial deepening on economic growth.

1.5. Research Objectives

This study pursues two objectives, as presented below:

1. To determine whether financial depth in Africa has a significant impact on economic growth.
2. To investigate the nature of causality between financial depth and economic growth in Africa.

1.6. Significance of the Research

Looking at the empirical evidence, the finance-growth nexus for developing countries provides opportunity and internally generated options for African governments to accelerate economic growth. Similar studies on financial deepening and economic growth nexus have been conducted, for example Ajija and Rizal (2019), Barajas (2016), Guru and Yadav (2019), Harisuddin and Hartono (2019), Ikhide (2015), Khan (2017), Obafemi, Oburota, and Amoke (2016), Pradhan et al. (2017), Salas (2018), and Xu (2000). The importance of this study is that it covers the gap in the limited literature on recent studies that focused on non-traditional forms (from financial institutions other than traditional banks) of financial deepening in Africa. The study will focus on the IMF financial institutions' depth index, which adds indicators for other financial institutions, namely the assets of the mutual fund and pension fund industries and the size of life and non-life insurance premiums, to the traditional banking sector depth measures used in various literature.

This study looks at more recent panel data in 51 African countries, with a focus on identifying policies unique to the region to accelerate economic growth. Harisuddin and Hartono (2019), in their study, suggest that policymakers invest in infrastructure and

networks that remove limitations to financial access of the public in order to rally domestic funds. Pradhan et al. (2017) found that the banking sector development should be prioritised to build confidence in the system, attracting more funds. Another way would be to change policy, for example, financial policy is driven by tourism reforms, as conceptualised by Folarin and Adeniyi (2019).

The addition to current literature that this study provides will not only benefit academics but will assist policymakers with empirical evidence on the current financial deepening and economic growth nexus in Africa. The paper also suggests a four-stage possible policy implementation mechanism to fully harness the potential benefits of financial sector development. Ordinary people are the ultimate beneficiaries of a developed robust financial sector, as their savings and investments are more protected and will earn higher returns; in turn growing the economy. With the economy performing, unemployment reduces, per capita income rises, thus presenting a better standard of living and reducing poverty and inequality.

1.7. Research Approach

The methodology assumed in the study is deliberated in Chapter Three. A mono-quantitative method approach was applied as the research questions in this study are descriptive statements that can be numerically modelled (Saunders, Lewis, & Thornhill, 2009). Longitudinal panel design was selected for this study since it involved examining a phenomenon across diverse countries over a period to determine any significant changes (Balnaves & Caputi, 2001).

Secondary data was downloaded from the World Bank Database and International Monetary Fund data bank. The data includes GDP, Financial depth composite index, Capital, Inflation, Trade percentage of GDP, and Terms of Trade. The two-step system GMM dynamic panel-data estimation results were then produced using Stata. The proponents of GMM (Arellano & Bover, 1995; Blundell & Bond, 1998) found this technique capable of yielding consistent and unbiased estimates as it uses the combination of the system regression in differences with the regression in levels. This technique was selected because it is simple to implement and does not require strong distributional assumptions. For the sub-problem, that is, to test for causality, the Dumitrescu and Hurlin (2012) Granger non-causality test was used to determine the direction of causality.

1.8. Delimitations

The aim of the study was to examine the entire African continent as a target sample. However, three (3) of the 54 African countries, namely Somalia, Sudan and Zimbabwe, were excluded because of a lack of data.

1.9. Structure of the Study

The study consists of five chapters, organised as follows: Chapter One contains the background and motivation for the study. Chapter Two is the theoretical and empirical literature review on the relationship between financial deepening and economic growth. Chapter Three discusses the research strategy, design, procedure and methods adopted by the study. Results were analysed in Chapter Four. Chapter Five concludes the research with some critical implications and recommendations for policy. It also presents possible avenues for further research.

CHAPTER TWO:
LITERATURE REVIEW

2.1 Introduction

Chapter Two is an assessment of the literature on financial deepening and economic growth. The review progresses from the basics of financial intermediation to financial deepening and the link to economic growth. By evaluating other studies, the discussion contrasts aspects of the financial deepening that can achieve or deter economic growth.

2.2 Theoretical Literature

2.1.1. Financial intermediation

Neoclassical theorists, such as Gurley and Shaw (1960), believe that transaction costs and asymmetry of information are at the core of financial intermediation. The function of financial intermediary traditionally performed by banks is fundamentally to allocate resources from net savers to net consumers, thus encouraging economic growth (King & Levine, 1993c). The intermediaries perform a vital role in managing information asymmetry, since inherently savers providing capital have less information about net borrowers' activities. Scholars such as Allen and Santomero (1997) are of the view that the role of intermediaries has shifted more to one of risk management. Participants are not only just banks, but include financial organisations such as mutual funds, insurance firms and pension funds, resulting in an increase in financial instruments and a decrease in transaction costs. Despite the disruptive technology that has affected the financial sector in the past few years, it can still be concluded that financial institutions play an important transmission role in the finance-growth nexus by efficiently converting savings to investment capital in firms that grow the economy (Ikhide, 2015).

Levine (2005), in his study, demonstrated how financial intermediaries' real services could influence savings returns, investment choices, technological modernisation and eventually economic growth. However, by its very nature, Levine’s (2005) work is inconclusive, as it seems to offer a disclaimer to its conclusions by proposing several areas of further research to consolidate its conclusions. Building on the work by Schumpeter (1911), Sunaga (2019)

identifies the critical role that intermediaries assume of monitoring the entrepreneurs who receive investments from the net saver's funds and its positive impact on long-term growth. These findings are also in line with expectations in developing economies, where it is observed that entrepreneurs drive economic activity, and information asymmetry can pose moral hazard problems for lenders, discouraging them from investing, thus negatively affecting growth. The resulting induced confidence by intermediaries unlocks more funds into the economy, increasing entrepreneurial borrowers' financial capacity, thus leading to economic growth. The complexity of the variables and the population that Sunaga (2019) employs do not correspond with the work's rather simplified solution. This raises the question as to whether correlation versus causation were adequately addressed as per Sunaga (2019).

From a preliminary perspective, based on the theoretical literature, there is no doubt about the significant transmission role financial intermediation plays in the financial deepening and economic growth nexus. However, development in the financial sector has seen the entrance of more participants, such as mutual funds, insurance firms and pension funds, providing stimuli for economic growth. On the other hand, disruptive technology has led to the down-streaming and complete eradication of other traditional services offered by intermediaries in the financial sector.

The study's main objective is to explore the relationship between financial deepening and economic growth in Africa, which is driven by efficient financial intermediation. Understanding theoretical frameworks behind this essential conduit assists in addressing the research objective, interpreting empirical results and producing practical recommendations. *The study assumes that financial deepening in the African countries positively influences economic growth.*

2.1.2. Financial deepening

Early scholars, such as Gurley and Shaw (1955), scrutinised the significance of the role of financial intermediation and the growth of financial institutions and assets, resulting in economic growth. Shaw (1973) took it a step further and pioneered the concept of the term *financial deepening*. Shaw (1973) defines this depth to be when deposits maturity collected from net savers are at equilibrium with credits maturity invested in net borrowers facilitated

by intermediaries. Shaw (1973) further elaborates how greater liberalisation promotes money mobilisation by eliminating price controls and permitting competition in developing regions, distributing much-needed credit from savings and foreign capital flows to stimulate growth. The arguments by Shaw (1973) have existed for almost half a century at the date of this research. If the argument of financial deepening is truly the panacea for economic growth, several questions come to mind in relation to the validity of these arguments. Firstly, is it valid that most of Africa is still in poverty with African governments being at a loss as to the next move towards the eradication of poverty through economic growth? Secondly, could the work by Shaw (1973) be seen as a classic example of construct validity in research, whereby, in relation to a modern economy, their aggregate measurements were measuring the wrong object?

In the same vein, Harisuddin and Hartono (2019) single out two channels in which financial systems have an impact on growth. The authors identify that it is achieved through technology modernisation and capital aggregation, supplying money by affecting the savings rate to encourage saving and effectively allocating it, consequently meeting the net debtors' demand. However, it is widely accepted that financial deepening involves the process of the proficient transmission of several mechanisms in a complex environment, such as the financial sectors in Africa, which are prone to moral hazard problems. The law of likelihood as per the fundamental principle of statistical reasoning by Hacking (1965) is in jeopardy.

The role of financial development in economic growth has been a contentious and an unsettled debate. Four main arguments have been established based on theory and evidence. Schumpeter (1911) pioneered the supply-leading theory, arguing that the injection of enough finance stimulates growth in the economy.

Having identified a credible gap in Schumpeter’s (1911) work in recent times, Ncanywa and Mabusela (2019) have followed the supply-leading theory and have gone on to conclude that in selected countries, there exists a short- and a long-run relationship between finance and economic growth. Ncanywa and Mabusela (2019), however, make these conclusions without establishing the extent of these short- and long-run relationships. The establishment of the extent of these relationships is for policy development influence value as compared to merely identifying it. Recommendations are made to deepen credit instruments in the African context, as insufficient access to credit contributes significantly to low productivity and limits

the contributions of enterprises to private sector development, thereby slowing economic growth.

Due to the failure of the work by Ncanywa and Mabusela (2019) to put forward the extent of the short- and a long-run relationship between finance and economic growth, it ultimately fails to convincingly overturn the earlier argument by scholars such as Menyah, Nazlioglu, and Wolde-Rufael (2014), who found no significant evidence supporting finance or trade-lead hypotheses. Due to the simplicity of Menyah et al.'s (2014) conclusions to such a complex matter, it can thus be concluded that there is a need to establish through research the extent to which financial deepening can stimulate economic growth.

Secondly, the demand-following theory coined by Robinson (1952), argues that financial services improve and deepen in response to the growth in the non-financial services sectors of the economy, such as production and manufacturing. The third leading theory, conceptualised by Patrick (1966), is the bi-directional theory. Patrick (1966) argues for a mixed effect, encompassing both the demand-following and supply-leading relationship. He stated that the financial market develops in response to economic growth, and financial markets, in turn, generate a feedback effect that propels real growth. Patrick (1966) found that the causality direction varies over the time of development.

After the 2007-2008 world economic crisis, Law and Singh (2014), like many other policymakers and academics, reconsidered traditionally accepted theories on the finance-growth nexus. Evidence is presented that there is a threshold for finance in influencing economic growth, presenting a non-linear hypothesis of financial deepening to economic growth. To a certain level of financial deepening, a positive relationship exists; after that, the authors discovered that a negative relationship emerges. These results could have been affected by a sampling error from a time perspective as an economic crisis has a way of distorting data and results. As such, whilst these findings can be considered, the considerations are made with such errors in mind.

The financial deepening process takes many forms, depending on the unique circumstances of the country or region. From the theoretical review, it is noted that no consensus has been reached. Finance may follow supply-leading, demand-following, or it is possible for both supply-leading and demand-following theories/hypotheses to hold simultaneously in the relationship between financial deepening and economic growth. It is therefore plausible to

observe a bi-directional causality between these two indicators. However, in empirical study, evidence can be found that the relationship is insignificant.

The second object of the study is to understand the direction of the relationship between financial deepening and economic growth. Understanding the causality relationship assists in making relevant and practical recommendations. *This study assumes that the direction of causality is bi-directional.* For example, both the supply-leading theory and demand-following theory may hold.

2.2 Empirical Literature

Empirical work has been conducted by various scholars around the financial deepening to economic growth nexus, using different proxies of measurement, different data timeline and sets ranging from provincial, country-specific to regional, as in this study. Although many studies, from the days of Schumpeter (1911) to Ncanywa and Mabusela (2019), have supported the positive impact of financial deepening on economic growth, mixed results have been observed by various empirical studies.

Based on finance-lead and the Cobb-Douglas theoretical framework (Douglas, 1948), as in this study, Le, Ho, and Vu (2019) found financial deepening to have a significant effect on economic growth. Financial depths measured by M3, domestic credit to the private sector, and stock market capitalisation for nine (ASEAN+3) countries from 2000 to 2014, were assessed. GMM was applied to resolve endogeneity. Le et al. (2019) found that 1-year lag capital measures were significant at 1%, and their immediate impacts were negative. Labour did not affect economic growth. Whilst the methods applied in this research are credible, it is however noted that the sample size of countries is insufficient to make such a complex conclusion. At the same time, the period of 14 years, which cuts across the 2008/9 recession period, is highly likely to have imported some anomalies in data due to the pre- and post-disaster contagion effect on financial markets and economic growth.

Nwaolisa and Cyril (2019) assessed the impact of financial deepening on economic growth in Africa's biggest economy, Nigeria. Data on private sector credit, money supply and market capitalisation was collected from 1990 to 2016 and analysed using Ordinary Least Squares (OLS). The results reveal that all proxies have a significant impact on economic growth in Nigeria. The paper recommends that policy should be set in a way that decreases barriers to

liquidness in the stock market, promote the flow of foreign capital, and create a local private credit sector environment that unlocks investable funds from non-performing credits. The study by Nwaolisa and Cyril (2019) cannot be taken as representative of the broader African context, due to its mere focus on one country Nigeria, which also happens to be the biggest economy in a region of countries which are significantly underdeveloped in comparison.

Ndebbio (2004) conducted a panel study on 34 selected African countries to examine the relationship between financial deepening, economic growth and development. Ordinary Least Squares (OLS) was used to regress the degree of financial intermediation (M2/Y) and growth rate per capita real money balances. The latter captures financial deepening. The results confirm a positive relationship between financial deepening and growth. The suggestion presented in the paper is that policy should grow real money balances and boost financial intermediation. This work faced numerous challenges, including a lack of data on other measures of financial assets in most countries sampled. This led to broad money (M2) being used as numerator for both variables. It is noted that a methodology should be designed to counter the risk of the chronic unavailability of data.

Ncanywa and Mabusela (2019) selected a few African countries and performed panel autoregressive and distributive lag models for data from 1980 to 2014. They selected four (4) variables to test, namely bank credit to the private sector, liquid liabilities, bank deposits, and economic growth. They found a positive relationship between bank credit to the private sector and liquid liabilities on economic growth and a negative relationship with gross savings. Suggestions are made in favour of financial development, as financial stability will generate jobs and increase productivity.

Khan (2017), in his study, examines the association of financial sector development and economic growth in selected developing and developed countries from 1970 to 2017. He uses the panel Dynamic Ordinary Least Squares, the Johansen panel co-integration test, the panel Fully Modified Ordinary Least Squares and the fixed and random effects' methods. The results reflect a positive long-term effect from private credit and liquid liabilities on GDP per capita in developing and developed nations. A negative correlation is observed from the bank deposits and deposits money banks assets on GDP per capita. The research universe that includes both developed and developing countries causes a correlation versus causation interpretation risk, as these countries' economic environments are worlds apart and driven by various socio-political fundamentals.

Ndebbio (2004), Ncanywa and Mabusela (2019), and Nwaolisa and Cyril (2019) conducted their studies using different proxies to measure financial depth, and in different periods with different data samples, country-specific vs panel of countries analysed using different methods. They reach the same positive results about the relationship of financial depth to economic growth because all the countries examined are in Africa, a developing region. These findings confirm the principle that there is a positive impact of financial deepening in developing regions. However, their work remains inconclusive, as it does not address the extent of this positive impact.

Some academics have, however, found financial deepening to harm economic growth, since the time of pioneers such as Robinson (1952). Mugano, Bara, and Le Roux (2016) empirically tested the finance-growth nexus for SADC countries, finding that financial development affects economic growth negatively in the region. Panel effects estimations and GMM were used to evaluate 15 SADC countries for a period covering 1985 to 2014. To measure financial development, Mugano et al. (2016) used private sector credit to GDP, total domestic credit by the banking system to GDP, and liquid liabilities of the financial sector. The study recommends that to stimulate economic growth through financial deepening, SADC needs to promote competition in the banking sector. Policymakers in the member countries are encouraged to fix structural and institutional challenges in their countries and strengthen weak financial systems. To address challenges of accessibility, suggestions are put forward for the use of innovative tools, such as agency and mobile banking. This research work becomes very important, as it is the most recent piece of work that looks at African countries and supports the antithesis of this and several other research studies. As such, it is worth noting.

Ajija and Rizal (2019), in their analysis of Indonesia, employed two models, namely Autoregressive Distributive Lag and Error Correction Model on annual time series data. The full money, government expenditure and trade openness were the variables used in the study. The study reveals that the more the region develops, the more the financial deepening economic growth nexus breakdown. What came as recommendations from their paper are that the Bank of Indonesia needs to explore how to use broad money to stimulate growth, as well as find ways to encourage trading on the stock exchange, as investors are not selling their shares, which negatively affects growth. The main weakness of this research lies in the fact that it is observing one country over such a broad policy topic. As such, the evidence is

insufficient to make broad conclusions based on it. It does, however, make a good construct to pursue this research area by increasing the research universe.

Paun, Musetescu, Topan, and Danuletiu (2019) emphasise the positive impact of more significant capital accumulation through a well-developed financial sector. They undertook a panel regression estimation technique of a balanced selection of 45, low-income, middle-income and high-income countries from 2006 to 2015. The study highlights the effect of elements of financial system development and financial system access and sophistication on economic growth. Mixed results were obtained, with the number of commercial bank branches, ease of access to loans, local equity market access, and soundness of banks positively affecting growth. However, domestic credit to GDP, domestic credit to private sector provided by banks, the market capitalisation of listed domestic companies to GDP, and non-performing bank loans to total gross loans exhibited a negative effect on economic growth. Refining banking activity, reducing private sector financing the public sector, and reducing impediments to investment and savings are suggested as policy reforms to encourage economic growth through financial deepening. These results reveal that identifying and selecting the right financial sector elements to develop have a positive effect on growth in Africa. The main weakness in this research work is the use of a significantly non-homogenous universe over a very short period of time (7 years) which happens to cut across the 2008/9 recession period, which in itself is an abnormality. The pre- and post-disaster contagion effect on financial markets and economic growth could have contributed largely to the findings and conclusions. Kpodar, Le Goff, and Singh (2019) look at the resilience of financial deepening policies for 38 low-income countries and find that banking reforms act as a buffer for trade shocks that may vary economic growth; this effect reduces, however, when they extend the study to 121 developing countries. Data was collected from 1978 to 2012 of financial development, including financial depth and GDP per capita, and analysed using the local projection approach, fixed effect estimator and the system GMM estimator. The paper recommends that poorer countries implement a policy that fosters a supervisory and regulatory framework in order to preserve steady economic growth, as in the case of Ethiopia, as presented by Birru (2019).

Pradhan, Arvin, Norman, and Bennett (2016) found a bi-directional Granger causality between financial depth and economic growth in the *"Next 11"* countries, identified by economist Jim O'Neill of Goldman Sachs Asset Management, as having a high potential to become large economies. They measured financial depth, using a composite financial depth

index that was constructed using eight specific and different indicators. The indicators used are financial claims on the private sector, broad money supply, domestic credit provided to the private sector, domestic credit provided by the banking sector, the equity turnover, market equity capitalisation, traded stocks, and the number of listed companies. The conclusions by Pradhan et al. (2016) are categorically stated to be “in the short run”. This research intends to raise policy formulation ideas that should be adopted with a “long run” perspective.

2.3 Conclusion

Studies on the relationship between financial depth and economic growth in Africa have been conducted for an earlier period and have either been country-specific or using variations of the broad money supply M2/GDP proxies. This study will use the composite depth measures by the World Bank and focus on the effects of the financial deepening contribution on economic growth in Africa from 1993 to 2017 by each of the following: Private Sector Credit, Pension Funds, Mutual Funds, and Insurance Funds.

This study is based on the premise that developed active financial intermediaries have a supply-leading and demand-following positive effect on economic growth and facilitate optimal capital allocation in the economy, which encourages economic growth. There is a clear case for the benefits of financial deepening in developing countries, where within lies the opportunity to set policy that optimises the current financial environment to facilitate accelerated economic growth.

The relationship between finance and growth has been deliberated in economic literature for decades. There is no consensus on the direction of the relationship, despite various empirical studies on the impact of financial deepening on growth. Numerous scholars assert that a developed financial sector enables economic growth, while others believe that financial development follows economic growth. Other academics contend that there is still a contradiction regarding the function of financial intermediaries in facilitating long-run sustainable economic growth.

CHAPTER THREE:
RESEARCH STRATEGY, DESIGN, PROCEDURE AND METHODS

3.1 Introduction

This chapter discusses the methodology of the study. The first objective of the study, discussed in sections 3.2 to 3.6, is to examine the impact of financial depth on economic growth in 51 African countries with available data from 1993 to 2017. The second objective, discussed in section 3.8, is to investigate the direction of the relationship between financial depth and economic growth in Africa. Data collection and measuring instruments are discussed in section 3.4.1, sampling methods and target population in section 3.4.2, analysis approach in section 3.5 and limitations in section 3.8.

3.2 Research Strategy

Saunders, Lewis and Thornhill (2012) define research strategy as a detailed, clear plan on how the research objectives will be addressed, including how data will be collected. The researcher's perspicacity of the world guides the philosophy, in which information is established in formulating the research paradigm (Saunders et al., 2012). Research can either follow qualitative, quantitative or a mixed strategy.

The purpose of this study is to examine the relationship of financial deepening on economic growth in 51 African countries. A quantitative approach that explains what is denoted by organised selected observations via numerical illustrations (Saunders et al., 2012), has been used in similar prior studies. This study will likewise adopt a quantitative research approach, given the quantifiable nature of the research data.

A mono-quantitative method approach was applied, since the research questions in this study are descriptive statements that can be numerically modelled (Saunders et al., 2009). Le et al. (2019), in their study, sought to examine the relationship between financial depth and economic growth in ASEAN+3 countries, and applied a similar strategy. The strategy was relevant to use because data was available to capture empirical evidence in the ASEAN region. This study also analyses numerical data to draw conclusions on the relationship between financial deepening and economic growth.

3.3 Research Design

Bell, Bryman and Harley (2018) mention that a research design specifies a structure for the compilation and evaluation of data. There are five prominent research designs, namely cross-sectional, longitudinal, case study, comparative and experimental. Longitudinal panel design was selected for this study since it involved examining a phenomenon across diverse countries over a period of time to determine any significant changes (Balnaves & Caputi, 2001). Compared to cross-sectional studies, longitudinal studies allow the trace of events trajectory at numerous points in time over extended periods (Farrall, Hunter, Sharpe, & Calverley, 2016). This provides a more meaningful analysis, as it enhances the credibility of scrutinised casual relationships and noticing unknown effects. Hsiao (2003) mentions that the use of panel data has an advantage of permitting robust modelling of composite economic performance, assuming either fixed or random effects, thus enriching statistical outputs. Many previous studies (Seven & Coskun, 2016; Trabelski & Cherif, 2017; Williams, 2019) successfully employed this research design to understand the relationship between financial development and economic growth.

3.4 Research Data and Sample

3.4.1 Data

This study used secondary country data sourced from the IMF and World Bank data banks to ensure reliability, as they are recognised developmental institutions. The variables used are described in Table 3.1. The data is for 51 African countries, covering the period between 1993 and 2017. The intention was to study all African countries; however, the sample countries and period are based on availability of data. Section 3.4.2 shows the names of the countries investigated in this study.

Table 3.1: Data description

Variable	Description	Source
gdp_{it} *(Gross Domestic Product) (Dependent)*	GDP denotes gross domestic product per capita	World Bank data
$fdep_{it}$ *(Financial Depth) (Variable of interest)*	Financial Institutions deepening composite index adds to the standard banking sector depth	IMF
k_{it} *(Capital) (Control variable)*	Gross capital formation (% of GDP)	World Bank data
inf_{it} *(Inflation) (Control variable)*	Inflation - consumer price index	IMF
trd_{it} (*Trade) (Control variable)*	Trade is the sum of exports and imports (% of GDP)	World Bank data
tot_{it} *(Terms of Trade) (Control variable)*	Net barter terms of trade index	IMF

Le et al. (2019) also based their study of the financial depth and economic growth nexus on the classic Cobb-Douglas theoretical framework. Le et al. (2019) state that in this recognised model of capital, labour and total factor productivity (TFP), the former two variables (i.e. labour and capital) follow diminishing marginal productivity. It means that to stimulate growth efficiently, it is better to invest in TFP, in this case represented by the contribution of financial deepening to economic growth.

To address the multidimensional process, financial development has become complicated, with financial systems becoming multifaceted, Svirydzenka (2016) created composite indices to be used as proxies for financial development. Of interest in this paper is the role of financial institutions in economic growth and, likewise, the study analysed the detailed index *(Financial Institutions depth composite index)* created by Svirydzenka (2016) as a regressor to growth. Financial Institutions deepening composite index enhances the standard financial deepening measures used in various literature (for example, bank credit to the private sector), to include financial institutions, incorporating the assets of the mutual fund and pension fund industries and the size of life and non-life insurance premiums. It is important to illustrate the growth and financial depth levels in the investigated African countries graphically.

3.4.1.1 GDP per capita and financial depth levels in Africa

Figure 3.1 shows GDP per country for the 51 African countries in 2017 based on the latest available data. Seychelles had the highest and South Sudan the lowest GPD per capita in Africa in 2017; South Sudan is war-ravaged with unstable financial sector infrastructure to support economic growth. Figure 3.1 shows that many African countries have low GPD per capita, except for the top ten countries.

Figure 3.2 shows the 2017 financial institutions depth index for African countries. As anticipated, war-torn South Sudan has the least developed financial sector depth in Africa. South Africa, the second-largest economy in Africa, has the largest financial depth index, also evidenced by financial services having the most substantial contribution to the South African economy.

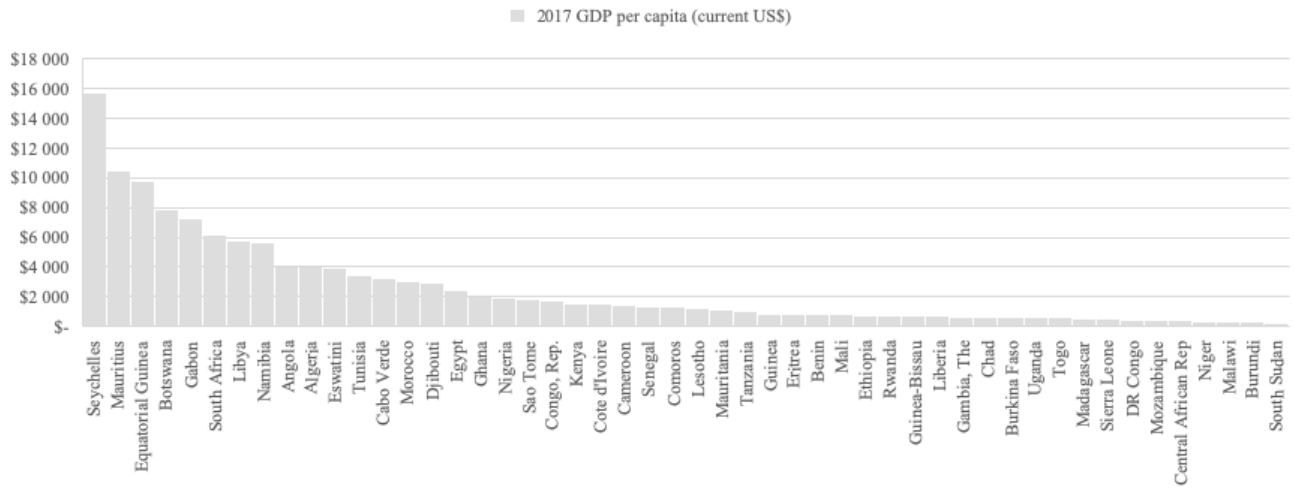

Figure 3.1: 2017 GDP per capita levels – country comparison

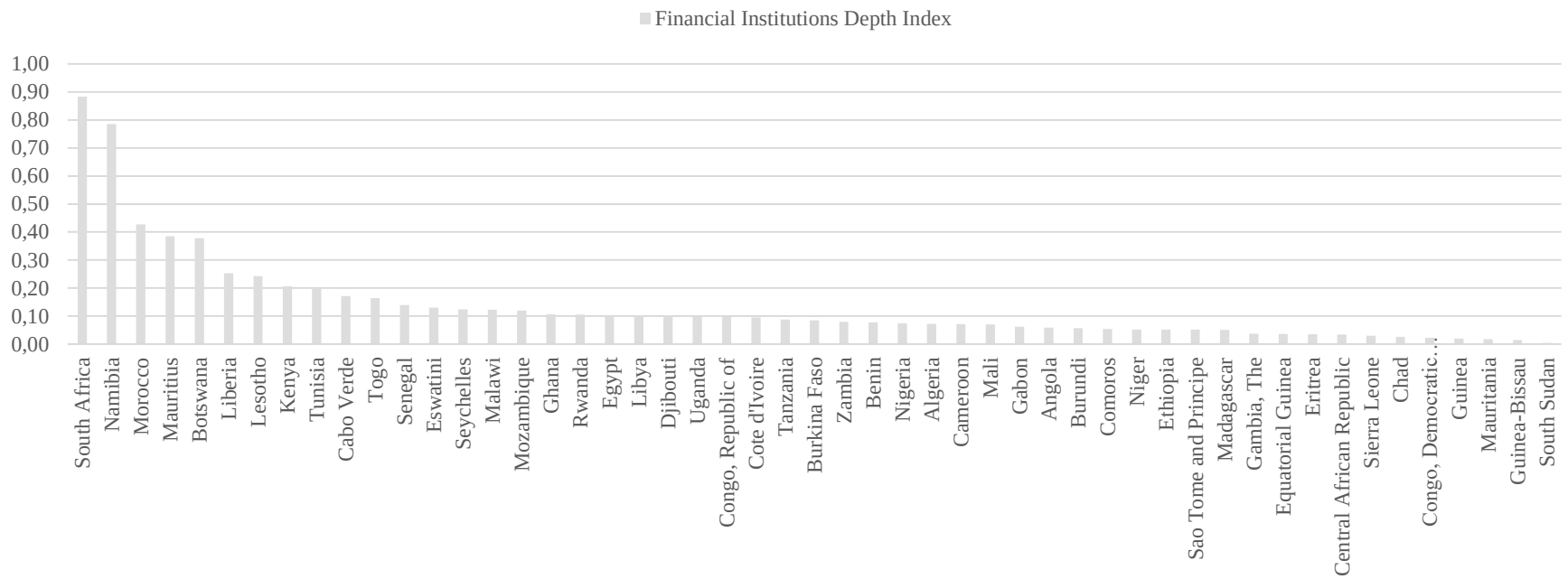

Figure 3.2: 2017 Financial Depth levels – country comparison

3.4.1.2 Trends of GDP per capita and Financial depth in Africa

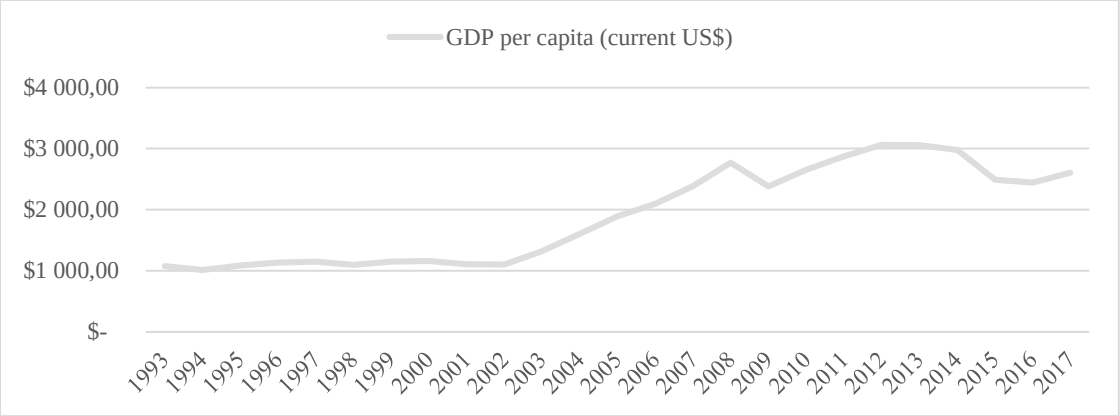

Figure 3.3: GDP per capita Trend (1993-2017)

Figure 3.3 shows the trend of average GDP per capita for Africa from 1993 to 2017. The GDP per capita in Africa was steady until early 2000 and rose sharply until we observe a sharp decline during the 2008 world economic meltdown. The GDP per capita is on a steady rise, albeit at a slow rate. There is, therefore, a need to investigate the impact of financial deepening on economic growth further.

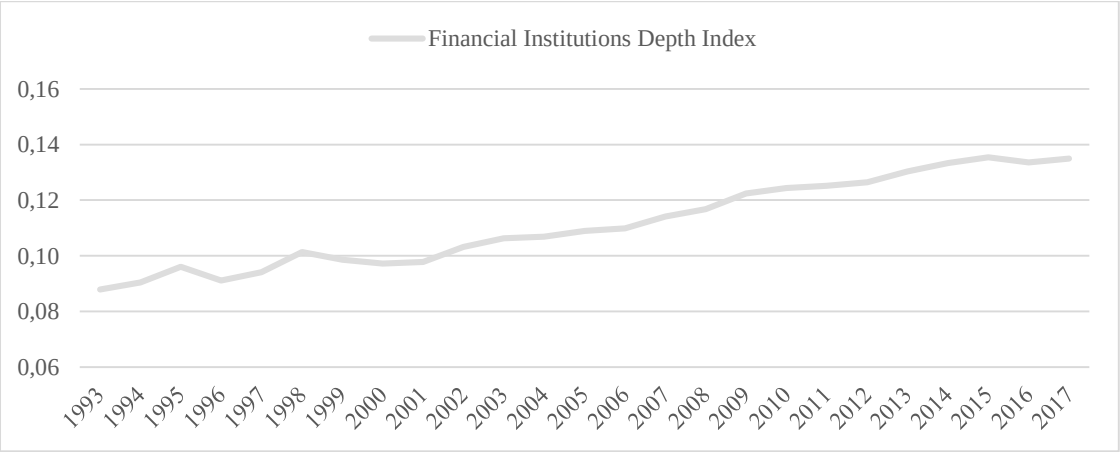

Figure 3.4: Financial Depth Trend (1993-2017)

Figure 3.4 shows the trend of financial depth in Africa from 1993 to 2017. The graph shows that financial deepening is sluggishly trending upwards. There is room to improve the rate and level of financial deepening in Africa.

3.4.2 Research sample

According to Saunders et al. (2012), a group of participants to whom you wish to generalise the results of a study is called a target population. Based on the availability of data for a period covering 1993 to 2017, 51 countries on the African continent formulated the population for this study. The countries selected are Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cape Verde, Cameroon, Central African Republic, Chad, Comoros, The Democratic Republic of Congo, Republic of the Congo, Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, South Sudan, Tanzania, Togo, Tunisia, Uganda, and Zambia. Three (3) of the 54 African countries, namely Somalia, Sudan and Zimbabwe, were excluded because of a lack of data. One common characteristic of countries in the Africa region, perhaps affecting economic growth and posing socio-economic problems, is that they are products of a colonial legacy. Engerman and Sokoloff (2005) argue that the institutional environments of several former colonies' past, with limited infrastructure, access to economic activities and opportunities, had adverse effects on economic growth.

Allen et al. (2014) investigated the African development gap relative to other peer developing countries. The study aimed to probe why financial sectors in African countries are underdeveloped and underperform in comparison to peer developing countries. They selected African countries as a target population because there is room to derive the benefits of possibly stimulating economic growth by closing the financial development gap. As this study demonstrates, the Africa region as the target population can benefit from the deepening of financial institutions, thus stimulating economic growth.

3.5 Research Procedure and Methods

Secondary data downloaded from the World Bank Database and IMF data bank was prepared using Microsoft Excel and imported into Stata. All variables (GDP, Financial depth composite index, Capital, Inflation, Trade % of GDP, and Terms of Trade) were transformed from raw data to the logarithm. Unit root tests for stationarity were performed before the dynamic panel regression analysis. The generalised method of moments (GMM), in particular, the two-step system GMM estimator, was implemented. The Arellano and Bond (1991) test for

serial autocorrelation and the Sargan test (Sargan, 1988) for over-identifying restrictions were used as diagnostics or specification tests. For the sub-problem, to test for causality, this study applies the Dumitrescu and Hurlin (2012) Granger non-causality test. The detailed discussion of the entire estimation procedure is discussed in this section, starting with the models.

3.5.1 Models

Referring to the work by Apergis, Filippidis, and Economidou (2007), Ncanywa and Mabusela (2019), and others in the literature review, this study built on the Cobb-Douglas function as a theoretical framework to model the effects of financial deepening on economic growth. More precisely, this study estimates an augmented Cobb-Douglas function of the following form:

GDP = f (Capital, Labour) (1)

where change in GDP represents economic growth as a function of total factor productivity, capital and labour. Given the above theoretical model, the empirical model of interest for this study is as follows:

$$gdp_{it} = \alpha_0 + \alpha_1 fdep_{it} + \alpha_2 controls_{it} + \varepsilon_{it,} \quad (2)$$

where *gdp* shows economic growth, *fdep* is the financial depth variable, *controls* include a set of other determinants of economic growth (capital, trade openness, terms of trade, inflation), for country *i* and time *t,* and ε_{it} is the error term.

The control variables are some of the factors considered essential for economic growth, such as capital, for example in Khan (2017), trade openness, for example in Ajija and Rizal (2019), terms of trade, for example in Ibrahim (2017), and inflation, for example in Ndebbio (2004).

All the variables are tested for unit root before estimating the above empirical mode in order to produce a reliable, stable model. Section 3.5.2 details the procedure to test for unit roots.

3.5.2 Pesaran unit root test

Longitudinal panel data for different countries was used in this study. Ngongang (2015), and Taivan and Nene (2016) emphasise the importance of testing whether data is stationary or

non-stationary, and if it contains a unit root or not, to avoid model misspecification causing spurious regressions. The study adopted the unrestrictive parameter movement, and higher power method developed by Im, Pesaran, and Shin (2003) (IPS hereafter when referring to the test), based on individual Augmented Dickey regressions that allow for heterogeneity in the panel structure. This method was later validated in work by Khan and Abbas (2016). The IPS test puts forward a procedure that uses averaged ADF test statistics across the panels. Since it does not assume convergence to the equilibrium value of units at a similar rate, the null hypothesis is that all the series included have a unit root.

The IPS test analyses the combined information from the cross-section and time-series elements of the variables, in a way that fewer time observations are required for the test to have power. According to Im et al. (2003), the IPS framework considers a sample of *X* cross-sections in this case 51 African countries, observed over *Z* periods. The IPS process starts by stipulating a distinct ADF regression for each cross-section with individual effects and no time trend. The first-order autoregressive stochastic process generated for the depended variable (gdp_{it}) can be represented as follows:

$$gdp_{it} = (1-\lambda_i)\eta_i + \lambda_i\, gdp_{it-1} + \varepsilon_{i,t}, \qquad i = 1,....,X,\ t=1,....,Z, \tag{3}$$

where the first values, $gdp_{i,0}$, are provided. We are concerned in testing the null hypothesis of unit roots $\lambda_I = 1$ for all *i*. Equation (4) can be written as

$$\triangle gdp_{it} = \delta_i + \theta_i\, gdp_{it-1} + \varepsilon_{it}, \tag{4}$$

where $\delta_i = (1-\lambda_i)\eta_I$, $\beta_i = -(1-\lambda_i)$ and $\triangle gdp_{it} = gdp_{it} - gdp_{it-1}$. The null hypothesis of unit roots then becomes

$H_0 : \theta_i = 0$ for all *i,*

against the alternative,

$H_1 : \theta_i < 0,\ i = 1,2,\ldots,Z_I, \qquad \theta_i = 0, \qquad i = X_I + 1, X_I + 2,.....,X.$

Consequently, the null hypothesis of the IPS test is that all series are non-stationary and the alternative hypothesis is that a portion of the series in the panel is stationary.

Post estimating individual ADF regressions, the average of the *t* stat for θ_i from the separate ADF regressions, $_{i,Z}(\theta_i)$:

$_{X,Z} = \theta$ (5)

The *t*- bar is then standardised using Monte Carlo methods, and it is observed that the standardised stat converges to the standard normal distribution as *X* and *Z* move to infinity.

3.5.3 GMM technique – Growth effects of financial deepening

This study adopted the system GMM estimation approach using Stata software. This addresses the first research question/objective concerning the effects of financial deepening on growth. The use of this GMM follows other studies, such as Roodman (2009) and Ibrahim (2017), who also estimated the economic growth impact of financial development. Arellano and Bover (1995), and Blundell and Bond (1998) found this technique capable of yielding consistent and unbiased estimates, as it uses the combination of the system regression in differences with the regression in levels. This technique was selected because it is simple to implement and does not require strong distributional assumptions. The principal rationale for the GMM choice is its ability to handle the potential problem of endogeneity. It is also possible that a feedback effect may exist from economic growth to financial development. These features may obstruct estimations when standard methods such as OLS are used; GMM, which relies on an instrumentation approach, overcomes these challenges.

To assess the effect of financial deepening on economic growth using the GMM approach, the study set out an empirical model where economic growth depends on its one-period lag to check countries' conditional convergence effect, financial deepening and the set of controls estimated in equation (6) below;

$$gdp_{it} = \alpha_0 gdp_{it-1} + \alpha_1 fdep_{it.} + \beta' cont_{it} + \gamma_{it} + \mu_{it} + \varepsilon_{it} \quad (6)$$

where $\ln gdp_{it-1}$ is the growth lag demonstrating the preliminary conditions, thus testing for the convergence effect as adopted by the neoclassical growth model; γ_{it} is the country-specific fixed effects, μ_{it} is the time effects, while ε_{it} is the idiosyncratic error term. The remaining variables are as previously defined. Note that the natural logarithms of the variables in the equation are applied.

The study estimates equation (6) above by using the system GMM estimator (Arellano & Bover, 1995). The equation of interest is first differenced using lagged levels of the independent variable as internal instruments and in levels using lagged differences as

variables. The approach resolves the econometric complications caused by the endogeneity of the lagged dependent *(gdp_{it-1})* and the unobserved country-specific effects eminent in growth models. The hypothesis is premised on the focus variable of interest *($fdep_{it}$),* which measures the effect of finance on growth. From equation (6), to eliminate heterogeneity, Arellano and Bond (1991) suggest taking the first differences as follows:

$$\Delta gdp_{it} = (1+\alpha_0)\Delta gdp_{it-1} + \alpha_1 \Delta fdep_{it} + \beta \Delta cont_{it} + \Delta \upsilon_{it} \quad (7)$$

$t = 1, \ldots \ldots \ldots, T,\ i = 1,2. \ldots \ldots N$

$\upsilon_{it} = \gamma_{it} + \mu_{it} + \varepsilon_{it}$

Using the following moment conditions:

$$E[gdp_{it-s}(\Delta \varepsilon_{it})] = 0 \text{ for } s >= 2,\ t = 3, \ldots\ldots, T \quad (8)$$

where β is the vector of parameters associated with each explanatory variable, s is the maximum lag in the model, and all variables are n. The other variables remain as previously defined.

Blundell and Bond (1998) suggest the use of additional moment conditions that rely on stationarity property of the variables to allow workings in system GMM. This will produce good predictions for a variable such as inflation that is persistent and endogenous. Hence, for the regressions in level, additional moment conditions will be as follows:

$$E[gdp_{it-s} - gdp_{it-s-1}(\gamma_I + \varepsilon_{it})] = 0 \text{ for } s = 1 \quad (9)$$

The model (equation 7) is run using the two-step system GMM estimator.

3.5.3.1 Specification tests

Specification tests were performed to examine the robustness of the model, as the consistency of the GMM estimator depends on the validity of the internal and external instruments (Arellano & Bond, 1991; Arellano & Bover, 1995).

This was done by using two tests: the serial correlation test and Sargan test for over-identifying restriction. The serial correlation null hypothesise that the error term is serially

uncorrelated. The exogeneity of the variables was tested using the Sargan test, with the null hypothesis that over-identifying restrictions are valid.

3.5.3.1.1 Serial autocorrelation

To test for serial autocorrelation, tests were performed on residuals using Stata commands, where the null hypothesis is that no second-order serial correlation is shown in the residual of the regression in differences. The original error is serially correlated if the second-order serial correlation of differenced residual is observed. This will render the internal instruments invalid, calling for higher-order lags to be used. In levels, unless the original error term follows a random walk, first-order serial correlation is expected. Hence support for the model is indicated by failure to reject the null in the second-order (Arellano & Bond, 1991; Arellano & Bover, 1995).

3.5.3.1.2 The Sargan/Hansen test of over-identifying restrictions

One of the most critical assumptions for the GMM estimation approach is that instruments are exogenous (Roodman, 2009). Using Stata commands to execute the Sargan/Hansen test of over-identifying restrictions, the software will generate a result to indicate the stability of the model. The null hypothesis of the Sargan test (Sargan, 1988) in Stata is that over-identifying restrictions are valid; hence support of the model is by indicated failure to reject the null hypothesis if the chi-squared statistic is not significant.

3.6 Granger Causality

The study adopted the Dumitrescu and Hurlin (2012) Granger non-causality test (DH test) to investigate whether there is a bi-directional relationship between the financial depth $(fdep_{it})$ and economic growth (gdp_{it}). The Dumitrescu and Hurlin (2012) method was developed as an extension to the method originally developed by Granger (1969). Using Stata commands, the study tested causality using the following model:

$$gdp_{it} = \alpha + \gamma_k\, gdp_{it-k} + \beta_k\, fdep_{it-k} + \varepsilon_{it} \quad \text{with } i = 1,\ldots,N \text{ and } t = 1,\ldots,T \tag{11}$$

The panel must be balanced with the K lag order identical for all individuals; however, coefficients are permitted to differ across individuals and time-invariant.

Causality was determined by testing the existence of significant effects of past values of *fdep* on the present value of *gdp*. The null hypothesis is represented as

$$H_0: \beta_{i1} = \ldots = \beta_{iK} = 0 \qquad _i = 1, \ldots, N \tag{12}$$

The null hypothesis says that *fdi* does not Granger-cause *gdp*.

One advantage of the DH test is that it assumes that there can be causality, not necessarily for all but for some individuals, thus the alternative hypothesis to be

$$H_1: \beta_{i1} = \ldots = \beta_{iK} = 0 \qquad _i = 1, \ldots, N_1$$

$$\beta_{i1} \neq 0 \text{ or } \ldots \text{or } \beta_{iK} \neq 0 \; _i = N_1 + 1, \ldots, N$$

H_1: *fdi* does Granger-cause *gdp* for at least one panel vector autoregressive country.

To produce the average critical Wald Statistic, DH test runs F tests for the K hypotheses $\beta_{i1} = \ldots = \beta_{iK} = 0$ and the N individual regression, where N_1 must be strictly smaller than N, else no causality is present for all individuals and H_1 reduces to H_0. Using the same F tests, Z bar statistic is produced when T and N approach infinity and Z bar tilde when for a fixed T dimension with $T > 5 + 3K$. The null hypothesis is rejected if both the Z bar and Z bar tilde are larger than the W bar statistic and conclude that Granger causality exists.

The DH test was selected because it has a favourable response to both large and small samples. It is simple to implement and does not need specific panel estimation, meaning that it can be easily implemented, even in unbalanced panels with different lag order for each individual. Alrabadi and Kharabsheh (2016), in their study of the relationship of financial deepening and economic growth in Jordan, adopted the Granger causality test as in this study. They found that there is a one-way causal relationship from economic growth to financial deepening.

3.7 Research Weaknesses—Technical and Administrative Limitations

The target population limited the desired research goals. The target population was all countries on the African continent. The diversity of circumstances in individual countries in the sample may lead to incorrect inference and conclusions about them.

The object of the study might have been affected by the integrity and validity of data assumed, as well as missing data sets. Secondary data was downloaded from the IMF and the World Bank, and the data collection methods employed by these organisations might lack quality and suitability for this study. Sources were vetted before being used.

The study had no control over data collection quality and accuracy, as secondary data was used. The study relied on the data compiled by reputable third parties where the research had no control over quality assurance.

An inherent limit on the appropriateness of study upon completion is associated with backwards-looking secondary data that was used in the study. Collected data over time might be outdated and irrelevant to draw meaningful, practical recommendations.

Economic activities are not controlled experiments, yet economic data available is modelled based on controlled variables, which present a limitation of heterogeneity bias. Economic behaviour cannot be generalised for the individual countries even though, like in this study, we can explore relationships at a regional level.

3.8 Conclusion

The purpose of this chapter was to examine the relationship of financial deepening on economic growth in Africa. A mono-quantitative method approach was applied. Longitudinal panel design was selected for this study since it involved examining a phenomenon across diverse countries over a period of time to determine any significant changes.

This study used secondary country data sourced from the IMF and World Bank data banks to ensure reliability, as they are recognised developmental institutions. Data was collected for a period covering 1993 to 2017 for 51 countries. Three (3) of the 54 African countries, namely Somalia, Sudan and Zimbabwe, were excluded because of a lack of data. All variables (GDP, Financial depth composite index, Capital, Inflation, Trade % of GDP, and Terms of Trade) were transformed from raw data to the logarithm.

Unit root tests for stationarity were performed before the two-step system GMM estimator was implemented. This technique is capable of yielding consistent and unbiased estimates, as it uses the combination of the system regression in differences with the regression in levels. We then used the Arellano and Bond (1991) test for serial autocorrelation and the Sargan test

(Sargan, 1988) for over-identifying restrictions as diagnostics or specification tests. For the sub-problem, to test for causality, this study applied the Dumitrescu and Hurlin (2012) Granger non-causality test.

The key limitations weakness identified was that the target population limited the desired research goals. The target population was all countries on the African continent. The diversity of circumstances in individual countries in the sample may lead to incorrect inference and conclusions about them. The object of the study might have been affected by the integrity and validity of data assumed, as well as missing data sets. Secondary data was downloaded from the IMF and the World Bank, and the data collection methods employed by these organisations might lack quality and suitability for this study. Sources were vetted before being used. The study had no control over data collection quality and accuracy, as secondary data was used. The study relied on the data compiled by reputable third parties where the research had no control over quality assurance.

CHAPTER FOUR:
RESULTS AND ANALYSIS

4.1 Introduction

Chapter Four discusses empirical findings on the relationship between financial deepening and economic growth in Africa. This chapter is divided into two major sections; the one presents an interpretation of the result that are shown in tables (section 4.2) followed by another section for analysing the results (section 4.3).

4.2 Interpretation of Results

This section interprets the results, which are presented in various tables, from descriptive statistics to causality.

4.2.1 Descriptive statistics

Table 4.1 below presents the summary statistics of the raw data variables for the sample of 51 African countries. Full names of abbreviations used in the table represent the following; Obs: Observations; Std.Dev: Standard Deviation; Min: Minimum; Max: Maximum; Skew: Skewness; Kurt: Kurtosis.

Table 4.1: Summary statistics

Variable	*Obs*	*Average*	*Std.Dev*	*Coefficient of Variation*	*Min*	*Max*	*Skew*	*Kurt*	*Correlation*
GPD	1275	1 834.84	2 806.93	1.53	102.60	22 942.58	3.23	13.58	1.00000
Financial Depth Index	1275	0.41	10.59	25.95	0.01	378.13	35.70	1 274.45	0.03920
Capital	1275	19.34	11.77	0.61	(2.42)	85.10	0.35	0.87	0.47830
Trade	1275	65.67	42.55	0.65	20.72	376.22	1.59	6.82	0.62350
Terms of Trade	1275	110.32	42.84	0.39	21.40	290.93	0.33	2.14	0.40460
Inflation	1275	37.71	684.03	18.14	(9.80)	23 773.13	33.09	1 141.56	(0.07810)

Notes: ***. ** and * denote significance at 1, 5 and 10% level. All variables are in logs.

GDP applied in this study is GDP per capita, which is a better measure of economic growth, especially when a panel of various countries is considered (given that it takes population size into account). The low-income levels of the countries in the region under consideration are reiterated by the low average real GDP per capita of $1 834.84 over the sample. The vast difference of cross-country economic performance is reflected in the large standard deviation for GDP per capita of 2 806.93. Financial Institutions Depth Index (FDI) averaged 0.41, corresponding with low capital averaging 19.34%, Trade and Terms of Trade averaged is 65.67% and 110.32% respectively. To measure the relative dispersion of variables, a ratio of the standard deviation to average the coefficient of variation (CV) was calculated. As anticipated, due to hyperinflation experienced by various countries in the sample selected over the period, Financial Depth Index and Inflation are the most volatile, with high CV values of 25.95 and 18.14, respectively. All variables, except Capital and Terms of Trade, are highly skewed to the right, with stats above 1, and their kurtosis is also above 3, indicating fat tails.

Fat tails violate normality assumptions of data that may lead to biased estimates. To increase the normality of the sample data, all variables were log-transformed, although the study applies the GMM approach that does not necessarily rely on distributional assumptions. All variables, except inflation in Table 4.1, are positively correlated with GDP. Capital, Trade openness and Terms of Trade are strongly and significantly related to GDP, representing economic growth, and Inflation has low but significate correlation with GDP.

4.2.2 Effect of financial development on economic growth

The main object of the study was to explore the relationship between financial deepening and economic growth in Africa. The assumption is that financial depth in the African countries positively influences economic growth. In line with the above research question, the study tested the following null hypothesis:

H_0: Financial depth has no positive impact on economic growth in Africa.

In the next section 4.2.2.1, unit root tests were performed, followed by the two-stage GMM that was used to test the above null hypothesis. The results are discussed in section 4.2.2.2.

4.2.2.1 Unit root test

Table 4.2: Pesaran unit root test

	Constant	
Variable	*Level*	*1st Diff*
GPD	2.903	-12.832***
Financial Depth Index	3.908	-15.566***
Capital	-0.470	-17.496***
Trade	-1.074	-17.309***
Terms of Trade	-1.224	-16.857***
Inflation	-11.741***	-28.010***

Note:*** denotes significance at the 1% level

Based on the robust and plausible IPS unit root test, as discussed in the previous chapter, results in Table 4.2 exhibit that all the variables except inflation were not stationary at level. However, at the first difference, the variables were stationary. In order not to avoid spurious regressions, the two-step GMM estimation technique was used, which differences the variables under consideration, dealing with the stationarity issue.

4.2.2.2 GMM Results

Table 4.3: System dynamic panel-data estimation

Number of obs	1173
Number of countries	51
Wald chi2(6)	3605.74***

Variable	***Coefficient***	***Std Error***	***z***	***[95% Conf. Interval]***	
GPD	-0.012***	0.002	-6.140	-0.016	-0.008
Financial Depth Index	-0.039***	0.009	-4.170	-0.057	-0.020
Capital	0.060***	0.012	5.050	0.037	0.083
Trade	0.654***	0.012	55.780	0.631	0.677
Terms of Trade	0.164***	0.013	12.410	0.138	0.190
Inflation	-0.057***	0.004	-15.410	-0.065	-0.050
Constant	0.038***	0.001	52.710	0.037	0.040

Specification tests

1. J - Statistic	48.072
(p-value)	(1.000)
2. m-statistic-2nd order	0.838
(p-value)	(0.402)

Note**: First difference has been applied to the variables**, d.GDP per capita is the dependent variable. Financial Depth Index, Capital, Trade Openness, Terms of Trade, Inflation are the logs of financial depth, capital, trade openness, terms of trade and inflation, respectively. All the GMM estimates, including an intercept, are performed. The GMM procedure in Stata automatically selects lags. *** denotes significance at the 1% level.

The estimated model with the results shown in Table 4.3 is correctly specified and adequate, as fully discussed in the next section.

The financial depth index coefficient (-0.039) is significant at 1%, suggesting that financial deepening has a negative relationship with economic growth. A percentage change in financial deepening results in a 0.039% decrease in economic growth. This finding is consistent with observations by Chakamera and Alagidede (2017), who applied the Generalized Method of Moments framework. The scholars also found an unexpected negative sign on the financial depth coefficient, which is usually positive, illuminating the poor development of financial institutions in Africa. The European Investment Bank (2013) report reveals that African financial systems are underdeveloped and concentrated, resulting in inefficiency at financial intermediation, which may affect economic growth negatively. According to Triki, Kouki, Dhaou, and Calice (2017), government may also have a role to play in creating financial repression that causes a negative relationship between financial

depth and economic growth. The study found that small banks' efficiency is affected by government effected price controls, which in turn negatively affects economic growth.

In respect to GDP, Trade openness and Terms of Trade show significant positive elasticities of 0.65% and 0.16% respectively. Many African countries have signed bilateral and multilateral trade agreements, promoting trade openness, which suggests a positive contribution to economic growth.

The Inflation coefficient -0.057 shows a significant negative relationship with economic growth, affirming findings by Baharumshah, Slesman, and Wohar (2016) that inflation is harmful to economic growth. A percentage change in inflation results in a 0.0557% decrease in economic growth. Adopting inflation targeting monetary policies in African countries to minimise the negative pressure on price levels may influence economic growth.

4.2.2.3 Diagnostic/Specification tests

The Wald chi-square statistic in Table 4.3 shows that the model is adequately jointly significant at 1%. The Arellano-Bond test for first and second-order correlation test for autocorrelation shows that the AR (2) z value is not significant, with a p-value of 0.4018. We fail to reject the null hypotheses that there is no autocorrelation. We are supporting the adequacy and stability of the model. The Sargan tests of over-identifying restrictions results show a non-significant Sargan statistic, and hence we fail to reject the null hypothesis. The J-stat p-value is equal to 1, which may indicate the problem of instrument proliferation. As such, caution must be taken when interpreting the results. Consequently, this is supporting the validity of the instruments used for the model.

4.2.3 Direction of causality between economic growth and financial development

The second object of the study was to investigate the direction of the relationship between financial depth and economic growth in Africa. The study applied the Granger casualty test to detect the direction of causality, that is ascertaining whether the direction of causality is unidirectional or bi-directional. *This study assumed that the direction of causality is bi-directional*. In line with the above research question and the assumption, this study tested the following null hypotheses:

H_0: A bi-directional causality does not exist between financial depth and economic growth.

H_1: A bi-directional causality does exist between financial depth and economic growth.

Results of the causality tests are discussed in the following section.

Table 4.4: Dumitrescu-Hurlin (individual coefficients)

Null Hypothesis:	W-bar	Z-bar	Zbar tilde
Lag 1			
Financial depth Index does not Granger-cause GDP.	1.8159	4.120***	2.993***
GDP does not Granger-cause Financial depth Index.	5.2406	21.414***	17.419***

Note: Financial depth index is Financial Institutions depth index in logs. GDP is the gross domestic product per capita (in logs). *** denotes significance at the 1% level.

Table 4.4 reports the results of the Granger causality tests between and financial deepening and economic growth. In the outcome of the Granger Causality results above, both the Z-bar and Z-bar statistic are significant at 1% and are larger than the W-bar statistic; hence we reject the null. The result suggests evidence of bi-directional causality between economic growth and financial deepening when financial deepening is measured by the financial institutions' depth composite index. This affirms that economic growth and financial institutions depth composite index have a causality relation and follow both supply-leading and demand-following hypotheses.

As in this study, Pradhan et al. (2016) found a bi-directional Granger causality between financial depth and economic growth in the *"Next 11"* countries identified by economist Jim O'Neill of Goldman Sachs Asset Management as having a high potential to become large economies. They measured financial depth using a composite Financial depth index constructed using eight specific and different indicators. The indicators are financial claims on the private sector, broad money supply, domestic credit provided to the private sector, domestic credit provided by the banking sector, the equity turnover, market equity capitalisation, traded stocks, and the number of listed companies. However, findings by Alrabadi and Kharabsheh (2016) contrast this study's finding, using credit granted to the

private sector to GDP as a measure for financial deepening. They found a unidirectional Granger causality between financial development and economic growth in Jordan.

4.3. Discussion/Analysis of results

The GMM framework adopted by the study found that there is a significant negative relationship between financial deepening and economic growth. The suggestion is that the level of financial institutions development in African economies currently adversely affects economic growth. The study's results are similar to what Chakamera and Alagidede (2017) and Law and Singh (2014) observed in their studies that growth could be constricted by inefficient financial development. Law and Singh (2014) argue that financial development, in our case through the deepening of financial institutions has to be implemented efficiently to realise a positive contribution to economic growth. They found a negative relationship between financial development and economic growth to be as a result of inefficiencies in financial intermediation playing a stagnating role instead of providing positive contribution.

Compared to developed economies, we observe that the financial depth index for African economies is lower, concurring to the underdevelopment thereof. Going with the supply-leading theory and results obtained by the study, the underdeveloped financial sector is stagnating growth; hence the negative relationship observed. Linking with the theory, the function of financial intermediary traditionally performed by banks is fundamentally to allocate resources from net savers to net consumers, thus encouraging economic growth (King & Levine, 1993c). The intermediaries perform a vital role in managing information asymmetry, since inherently savers providing capital have less information about net borrowers' activities. Scholars such as Allen and Santomero (1997) are of the view that the role of intermediaries has shifted more to one of risk management. Participants are not only just banks, but include financial organisations such as mutual funds, insurance firms and pension funds, resulting in an increase in financial instruments and a decrease in transaction costs. Financial institutions play an essential transmission role in the finance-growth nexus by efficiently converting savings to investment capital in firms that grow the economy (Ikhide, 2015). Levine (2005), in his study, demonstrated how financial intermediaries' real services could influence savings returns, investment choices, technological modernisation and eventually economic growth. Hence the right level of financial deepening detects whether the economy can grow or like in this study affects economic growth negatively. The results of the

study indicate that the level of financial depth is not sufficient to stimulate economic growth. African policymakers need to implement a policy that focuses on developing their financial sectors in order to fuel economic growth the case argued by Berglof and Bolton (2002). If the financial sector is underdeveloped, as evidenced by the study in the case of Africa, Fung (2009), in their study, suggests that the economies will continually underperform unless meaningful, efficient financial development is implemented. To further this view, the United Nations Conference on Trade and Development (2015) report identified that the potential financial deepening, through financial sector growth potential, has to trickle down and alleviate Africa's social and infrastructure development problems.

The study results show that both trade openness and terms of trade have a significant positive relationship to economic growth. Menyah et al. (2014) found the same result of trade openness together with financial deepening positively contributing to economic growth. Manova (2012) puts an argument of dysfunctional financial sector hampering trade, stating that economies with developed financial systems trade more compared to those without. From the results, the positive relationship between GDP and trade openness and terms of trade means the more trade with more developed financial sector, the more substantial the impact on economic growth. African governments, therefore, have to implement policies that encourage trade openness, for example, sign more trade agreements.

On the other hand, the study found that inflation has a negative relationship significant to growth. Ghosh and Phillips (1998) and Fischer (1993) obtained similar findings on the adverse effect of inflation on growth. Policymakers in Africa should implement growth strategies wary that inflation will not rise to a point that it reverses the growth efforts.

The Granger causality tests found that there is a bi-directional relationship between financial deepening and economic growth. Similar to this study, Pradhan et al. (2016) also found a bi-directional Granger causality between financial depth and economic growth. From the theory ideally, the demand-following theory is associated with developed economies as the financial sector grows to meet the demand for financial products created by economic growth Robinson (1952) found that supply-leading theory is for developing economies as in Africa, where deepening by an increase in the supply of financial products drives economic growth. The results of the study show a bi-directional meaning that since the financial sector is not fully developed, there is an interchangeable role of influence between financial depth and economic growth. Patrick (1966) found that supply-leading and demand-following co-explain

the financial development-growth link. Cecchetti and Kharroubi (2015), in their study, found that financial development affects growth in two directions depending on the level of financial development. It is recommended that African policymakers should implement policies that encourage financial development but frequently review them to ensure that they are yielding the desired intention of economic growth and not stagnating it.

4.4 Conclusion

The study investigated the relationship between financial deepening and economic growth in 51 African countries over the period 1993 to 2017. The study focused on the depth of financial institutions as a proxy for financial deepening as an alternative to traditional capital providers, usually banks and capital markets, as in various studies, that stimulate economic growth. Using the GMM framework, the study found that there is a negative relationship between financial deepening and economic growth.

The strong statistical significance of the Z statistics of the Granger Causality tests indicates a robust bi-directional relationship between financial deepening and economic growth. To exploit the full economic potential, the results indicate that governments in African countries should increase their efforts to reform financial sector policy in their economies. As in the findings by Mugano et al. (2016), policymakers in the African countries are encouraged to fix structural and institutional challenges in their countries and strengthen weak financial systems.

CHAPTER FIVE:
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary and the conclusions drawn from the analysis of this study. The key policy recommendations of the study are also provided. This chapter closes by offering some areas that require further research.

The purpose of the study was to investigate the relationship between financial deepening and economic growth in 51 African countries. This study applied the IMF financial institutions' depth composite index, which adds indicators for other financial institutions, namely the assets of the mutual fund and pension fund industries and the size of life and non-life insurance premiums to the standard banking sector depth measure used in various literature (bank credit to the private sector). The main inspiration for the study was to investigate ways to stimulate economic growth in Africa through the deepening of financial systems. There is a clear case for the benefits of financial deepening in developing countries, and herein lies the opportunity to set policy that optimises the current financial environment to facilitate accelerated economic growth.

5.2 Summary and Conclusions

This study assessed the relationship between financial deepening and economic growth in 51 African countries. The study mainly took a new dimension through its analysis of the effect of deepening of financial institutions on economic growth.

This study thus focused on the financial deepening and economic growth nexus in Africa that has not seen much attention in the literature. Specifically, the study provided answers to the following research questions: What is the relationship between financial deepening and economic growth in 51 African countries? What is the direction of the relationship between financial depth and economic growth in 51 African countries? The findings of the study are summarised below.

5.2.1 Financial deepening and economic growth relationship

Using the two-step generalised methods of moments (GMM), the study assessed the relationship of financial deepening and economic growth in 51 African countries. The findings reveal that there is a significant negative relationship between financial deepening and economic growth. The suggestion is that the level of financial institutions' development in African economies currently adversely affects economic growth. Going with the supply-leading theory and results obtained by the study, the underdeveloped financial sector is stagnating growth as a result of inefficiencies in financial intermediation playing a counter role instead of providing a positive contribution. The study results also show that both trade openness and terms of trade have a significant positive relationship to economic growth. This means more increased trade could have a more substantial impact on economic growth. On the other hand, the study found that inflation has a negative relationship significant to growth. This indicates that policymakers in Africa should implement growth strategies, being cautious that inflation will not rise to a point it reverses growth efforts.

5.2.2 Causality between financial deepening and economic growth

The Granger causality tests applied further show that there is a bi-directional relationship between financial deepening and economic growth. The main conclusion from the study is that there is a multidimensional-approach opportunity for African countries to develop their financial sectors further to stimulate economic growth. Possible interventions in policy can be to create an environment that aims to encourage either a demand-following and/or supply-leading approach to financial sector development. Both strategies will result in financial deepening and may stimulate economic growth since there is a bi-directional relationship between financial deepening and economic growth.

5.2. Limitation

The study limited the financial deepening measure adopted. The study used an index for financial institutions that was conceptualised and compiled by the IMF in 2015 for prior years and the same method for subsequent years. Data reliability and quality limitation are inherent in measuring methods, as relevance and suitability of methods changes over time. Secondly, the contribution of financial deepening to economic growth is multifaceted, and results could

have been more robust if constituents of financial deepening other than financial institutions' depth were considered as measures.

Third-party secondary data was analysed in the study, posing a limitation on constancy and quality in collection mechanisms.

Due to data availability, the study placed a limitation on the period analysed, 1993 to 2017. Availability of the latest data could have enriched the results. Furthermore, although the intention was to study the entire African region, Somali, Sudan and Zimbabwe were excluded from the target sample because of a lack of data. Generalised conclusions can, therefore, not be drawn from the target sample with some countries excluded from the target sample.

5.3. Policy Implications and Recommendations

Critical implications and recommendations are discussed in this section. The GMM and Granger casualty results discussed in Chapter Four show that there is a negative bi-directional relationship between financial deepening and economic growth. The findings highlight the extent to which the current financial sector development in most African countries is adversely affecting economic growth. The current weak financial and banking sector is not playing the financial mediation role effectively in the African economies. The study recommends that policymakers make the following four policy changes to induce economic growth through financial deepening.

Firstly, it is recommended that policymakers create an environment that enables a more significant segment of the population to access the financial sector. More participants in the financial sector may result in financial institutions deepening to meet the potential market growth. From the findings of the Granger causality tests, financial institutions' depth causes economic growth. It is recommended that policymakers in Africa implement policies that encourage greater access and opening of the financial sector.

Secondly, linked to the above recommendation, financial deepening is linked to the increase in financial products in the economy. Following the demand theory, an increase in appetite for more financial products would result in financial institutions deepening their capacity to make more products available to meet the increased market, thus eventually positively affecting economic growth. To realise this potential avenue, households must have the ability

and capacity to invest in financial products. Given the high poverty rates in Africa, most of the household income is used for consumption, with little to none left for investment. It is suggested that governments implement policies that are aimed at reducing poverty for households, thus increasing disposable income and, in turn, funds available to invest. Demand for financial products will increase, with financial institutions deepening in response and potentially improving the finance-growth relationship.

Thirdly, from the GMM findings, there is a negative relationship between the financial institutions' depth index and economic growth due to low investment in the financial sector in Africa compared to other developed regions. Given the significance of financial deepening to economic growth, policymakers should set a policy to inject more investment in the financial sector, which can induce economic growth.

Lastly, governments should implement a policy addressing the integrity and efficiency of the financial sector. Efficient and robust financial intermediation is a conduit for financial sector development to foster meaningful economic growth. Economic growth may be adversely affected by an underdeveloped financial sector, as it is associated with sub-optimal resource allocation, rigidities and high transaction costs. African policymakers need to formulate strategic policies that encourage regulated competition to enhance credit allocation and promote efficiency in the financial sector, which may result in a positive contribution to economic growth.

Capital has a significant relationship with economic growth. The study proposes that governments encourage injection and movement of capital in the economy through deepening financial institutions. This can be achieved by introducing favourable capital tax regimes and incentives for capital owners to invest in the economy.

Trade openness and terms of trade have a significant positive relationship with economic growth. To encourage more trade, the study recommends that policymakers in Africa implement strategies that encourage trade by lowering barriers or restrictions. A good example would be the newly signed African Continental Free Trade Area meant to boost inter-Africa trade that has been lagging. This has the potential to grow participating economies.

From the results of the study, inflation negatively influences growth. It is recommended that fiscal and monetary policy align objects and use tools at their disposal to stimulate financial

sector growth but curb inflation to never reach thresholds that wipe out gains made in economic growth.

5.4. Areas of Further Study

This study analysed the financial deepening and economic growth nexus with limited time as a partial requirement for a Masters' degree in finance and investment programme. The study took a macro view on African countries as a collective region; findings in this study lead to call for further research on specific individual countries, assessing their unique circumstances in detail.

The period considered in the study is from 1993 to 2017. It would be interesting for further studies to split the analysis into before and after the 2008 global financial crisis when examining the impact of financial institutions' depth on economic growth per country. Many economies were on upward growth trajectories pre-2008 and where negatively affected by the world meltdown in 2008. The meltdown had a significant impact on the financial sector, prompting policymakers to tighten financial sector regulations, conduct and monitoring that may have resulted in slowing down or a reversal of financial sector development.

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