

Anglia Ruskin University  
Faculty of Business and Law  
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**The Impact of Sectoral Bank Lending on Economic  
Growth in Nigeria**

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ANGLIA RUSKIN UNIVERSITY

ABSTRACT

FACULTY OF BUSINESS AND LAW

DOCTOR OF PHILOSOPHY

**THE IMPACT OF SECTORAL BANK LENDING ON ECONOMIC GROWTH IN  
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Following the unresolved scholarly debates on finance-growth nexus, this thesis contributes to existing knowledge by building on the work of Odedokun (1996). In this regard, this thesis provides an alternative approach to investigate the impact of bank lending on economic growth from the sectoral perspective using aggregated data or sectors and disaggregated data or sub-sectors for the longitudinal timespan 1961 to 2017, in Nigeria. This study adopts the bounds testing approach to investigate long-run relationship between the variables, and further applies ARDL-ECM and VAR models, based on the outcome of the bounds test.

From the aggregated data or sectors perspective, the research findings show that there is no positive and statistically significant relationship between sectoral bank lending and economic growth in Nigeria. Additionally, the Wald test shows existence of neutrality hypothesis between sectoral bank lending and economic growth in Nigeria. From the disaggregated data or sub-sectors perspective, real estate and construction, and transport and communication sub-sectors show positive and statistically significant relationship with economic growth in Nigeria, in the long run. Manufacturing, and personal and professional sub-sectors show positive and statistically significant relationship with economic growth in Nigeria, in the short run.

The Wald test for disaggregated data shows that growth in labour Granger causes economic growth only in the production sector, while proxies of economic growth Granger cause economic growth in services and general commerce models. Additionally, this study reveals feedback hypothesis between agriculture, forestry and fishery sub-sector and economic growth in Nigeria. However, manufacturing; transport and communication and credit to financial institutions sub-sectors show finance-led growth view/supply-leading hypothesis, while personal and professional sub-sector shows growth-led finance/demand following hypothesis.

**Key words:** sectoral bank lending, economic growth, transport and communication, finance-led growth.

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## LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AFDB	African Development Bank
AMCON	Asset Management Corporation of Nigeria
ARDL	Autoregressive Distributed Lag
BoE	Bank of England
CBN	Central Bank of Nigeria
COSO	Committee of Sponsoring Organisations of the Treadway Commission
CSR	Corporate Social Responsibility
CUSUM	Cumulative sum of recursive residuals
CUSUMQ	Cumulative sum of squares of recursive residuals
ECM	Error Correction Model
ERGP	Economic Recovery and Growth Plan
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GECF	Gas Exporting Countries Forum
GSM	Global System for Mobile Communications
GW	Gigawatt
ICAAP	Internal Capital Adequacy Assessment Process
IMF	International Monetary Fund
LBS	Lagos Business School
MAN	Manufacturers Association of Nigeria
MBPD	Million Barrel Per Day
MEP	Maturity Extension Program
MPC	Monetary Policy Committee
MPR	Monetary Policy Rate
MRR	Minimum Rediscount Rate
NBS	National Bureau of Statistics
NNPC	Nigerian National Petroleum Company
NOTN	Nigerian Office for Trade Negotiations

OECD	Organisation for Economic Corporation and Development
OPEC	Organisation of the Petroleum Exporting Countries
OMO	Open Market Operation
PP	Phillips Perron
R&D	Research and Development
SAP	Structural Adjustment Programme
SCAP	Supervisory Capital Assessment Program
SDUs	Savings Deficit Units
SGDs	Sustainable Development Goals
SSUs	Savings Surplus Units
U.K	United Kingdom
U.S	United States

## CHAPTER ONE

### BACKGROUND TO THE STUDY

#### 1.1 Chapter Introduction

This chapter of the thesis provides a comprehensive discussion about context of the research to highlight the issues revolving around the topic with reference to relevant existing studies. As such, this chapter focuses on motivation and rationale of the study to highlight the aim, contribution to knowledge, research questions, hypotheses and research objectives of the thesis. Also, this chapter provides overview of research methodology for the study to enhance clarity of how the research will be conducted to readers. Additionally, this chapter provides a structure outline for the remaining chapters of the thesis with brief discussion; this ensures readers have expectations of each chapter of the thesis. Furthermore, this chapter culminates with a summary and expectation of the next chapter.

#### 1.2 Context of the Research

Over the years, the empirical and theoretical literature on the nexus between finance and economic growth holds an ambiguous and inconclusive explanation regarding the relationship between the two variables (Kar, Nazlioglu and Agir, 2011; Uddin, Sjo and Shahbaz, 2013; Adu, Marbuah and Mensah, 2013; Nyasha and Odhiambo, 2017a; Pan and Mishra, 2018; Oyebowale and Karley, 2018). According to studies such as Arize, Kalu and Nkwor (2017), Puatwoe and Piabuo (2017) and Alexiou, Vogiazas and Nellis (2018), the continuous empirical investigation of the significant relationship between financial sector and economic growth emanated from two pioneering economists: Bagehot (1873) and Schumpeter (1911).

The earlier view of Bagehot (1873) stresses the crucial role of the banking system in enhancing economic growth, and highlights how banks stimulate growth and innovation through funding productive investments. In line with this, Bagehot (1873) argues that the financial system played a significant role in igniting industrialisation in England through enhancing mobilisation of capital to execute enormous works. In a similar vein, a prominent literature in finance-growth relationship is the view of Schumpeter (1911) which highlights that the provision of financial services by financial institutions enhances economic growth and technological innovation. As such, this assertion of Schumpeter (1911) is grounded on the basis that financial

development enhances economic growth through the provision of sufficient funds to economic agents for productive use.

Consequently, the views of Bagehot (1873) and Schumpeter (1911) are often regarded as the first framework in evaluating finance-led growth hypothesis as the views emphasise on efficient allocation of resources to productive economic sectors from unproductive economic sectors through financial intermediaries (Puatwoe and Piabuo, 2017; Hamdi, Hakimi and Sbia, 2017). In line with the foregoing, a later study of Robinson (1952) contributes to the debate by opposing the views of Bagehot (1873) and Schumpeter (1911) as it considers finance as a quite insignificant factor in the growth process.

As such, Robinson (1952) proposes the growth-led finance paradigm by arguing that demand for financial services increases as output increases which concurrently has a positive influence on financial development. Hence, the growth-led finance paradigm indicates that “where enterprise leads, finance follows” (Alexiou, Vogiazas and Nellis, 2018). Nonetheless, Alexiou, Vogiazas and Nellis (2018) further accentuates that growth may be limited by creation of credit in less developed financial systems and regarded as an endogenous response to demand requirements in more sophisticated systems. Hence, financial development is determined by growth in output and not opposite; all things being equal.

In a reconciling approach, Patrick (1966) contributes to the ongoing debate on the nexus between financial development and economic growth by considering the relevance of the views expressed by Bagehot (1873) and Schumpeter (1911) on the one hand, and the view of Robinson (1952) on the other hand. In this regard, Patrick (1966) explains the causal nature among financial development and economic growth using two set of hypotheses: demand-following and supply-leading.

According to Patrick (1966), the supply-leading hypothesis supports the finance-led growth view of Bagehot (1873) and Schumpeter (1911) as it portends that the development of a robust financial sector in an economy can stimulate economic growth. Thus, the creation of a financial system within an economy in advance of demand for financial services will drive real sector into growth. This is achieved through channelling of scare resources from savings surplus units to savings deficit units based on highest rates of return on investment (Adu, Marbuah and Mensah, 2013; Ghartey, 2018). In contrast to the supply-leading hypothesis which supports finance-led growth view, the demand-following hypothesis of Patrick (1966) supports



the growth-led finance postulation of Robinson (1952) by asserting that growth in real sector will drive high demand for financial services. Hence, development of the financial sector is a consequence of demands of real sector growth in the economy (Prochniak and Wasiak 2017; Ghartey 2018).

Subsequent studies such as Goldsmith (1969), McKinnon (1973) and Shaw (1973) also provide notable contribution to the finance-growth postulations which was initiated by Bagehot (1873) and Schumpeter (1911). On the other hand, the study of Goldsmith (1969) centres on the nexus among financial development and investment efficiency. On the other hand, the studies of McKinnon (1973) and Shaw (1973) focus on the importance of financial liberalization in enhancing savings and investment. The view of Adu, Marbuah and Mensah (2013) pinpoints that the studies of McKinnon (1973) and Shaw (1973) enhanced the adoption of liberalization in the financial sector of several developing countries including Nigeria. The Nigerian economy became a member of the International Monetary Fund on March 30, 1961 (IMF, 2017) and adopted the Structural Adjustment Programme (SAP) in 1986 (The World Bank, 2018).

According to IMF (2017), the International Monetary Fund comprises of 189 countries working together to promote global monetary cooperation, foster international trade, secure financial stability, encourage sustainable economic growth and high employment, and support poverty reduction around the world. As such, under the SAP, Nigeria reformed its trade policies, foreign exchange system, and regulations related to business and agriculture (The World Bank, 2018). Despite the two hypotheses proposed by Patrick (1966) which explain the relationship between finance and growth, the view of Lucas (1988) refutes these two hypotheses and argues that the impact of the financial system is being 'over-stressed' on economic growth. Thus, the finance-growth relationship does not exist.

In line with the ongoing, the studies of McKinnon (1973) and Shaw (1973) provides a convincing theoretical framework to buttress the importance of financial development on economic growth. As such, central banks and pervasive government regulations cause distortions in financial markets which concurrently have adverse effects on savings and investment decisions (Alom, 2018). For instance, low level of interest rate discourages savings and promotes inefficient investment which hinders economic growth in developing economies. Arguably, the McKinnon-Shaw financial liberalization prescription for developing economies focuses on interest rate

deregulation (market-driven) and allows financial institutions allocate funds efficiently to foster investment and economic growth (Kar, Nazlioglu and Agir, 2011; Ghartey, 2018). Additionally, Kar, Nazlioglu and Agir (2011) accentuates that a higher interest rate through financial liberalization does not only ensure efficient allocation of funds but also enhances availability of loanable funds by encouraging savings from economic actors.

Based on these discussed pioneer studies, the impact of bank lending on economic growth has created significant scholarly attention on the functions of banks in the financial intermediation process till date. Particularly, as new endogenous theories of economic growth emerge (Hao, 2006; Schertler, Buch and Westernhagen, 2006; Leita, 2012). However, Hao (2006) postulates that the role of financial intermediation on economic growth has been attached with several levels of importance by different economists. Affirming this assertion, Hassan, Sanchez and Yu (2011) asserts that the impact of the financial system on economic growth has generated various contradictory views. Additionally, Hao (2006) accentuates that financial intermediation through reduction of transaction and information costs can affect economic growth in terms of productivity and capital formation.

For productivity, Levine (1997) argues that the function of financial intermediaries within the economic system help to allocate capital efficiently by enhancing risk management, recognising promising projects, monitoring management, and enhancing exchange of goods and services which concurrently improves total factor productivity. Evidence of this argument emanates from the study of Greenwood and Jovanovic (1990) which reveals that financial intermediation serves as a vehicle for risk sharing and diversification, which induces a shift in allocation of capital towards projects that are risky but possess high expected return. As such, this shift simultaneously stimulates improvement in productivity and economic growth. In addition to this, the research of Bencivenga and Smith (1991) reveals that financial intermediaries promotes economic growth through activities which favours efficient utilisation of capital: pooling specific liquidity risks, channelling financial savings of households to projects which are illiquid but possess high return, and preventing untimely liquidation of profitable investments.

Conversely, the impact of financial intermediation through capital formation is ambiguous as savings rate may increase or reduce due to income and substitution effect (Hao, 2006). Nonetheless, McKinnon (1973) asserts that when economic units are limited to self-finance, accumulation of funds must prevail in order to undertake huge investments. Hence, money and physical capital are complements rather than substitutes. Additionally, the function of financial intermediaries in facilitating activities within the economy is enhanced through efficient allocation of resources, capital and obtaining information, and ability to augment investment efficiency and manage liquidity risks (Allen and Gale, 1999). Mahran (2012) affirms the view of Allen and Gale (1999) by postulating that long-term sustainable growth in economic activity is embedded in high rates of human and physical capital accumulation. However, such long-term sustainable economic growth is greatly determined by the ability of an economy to ensure easy access, and allocate productive assets and financial resources effectively.

In this regard, financial intermediation is explained by the credit channel transmission of monetary policy regarded as lending view or bank lending in an economy. In this regard, banks serve as financial intermediaries between savings surplus units and savings deficit units in order to enhance the transfer of funds into different economic sectors. Thus, banks help in solving the problems of asymmetric information existing in credit markets (Mishkin, 1996) which helps to boost spending and investment. As such, it is arguable that financial intermediation remains essential in enhancing economic growth as it helps in efficient channelling of funds to different economic sectors.

Going by the causality postulations of Patrick (1966) as earlier discussed, Lin (1981) as cited in Alexiou, Vogiazas and Nellis (2018) asserts that the direction of causality between finance and growth will remain unresolved theoretically and empirically. By the same token, Alexiou, Vogiazas and Nellis (2018) argues in line with Calderon and Liu (2003) that there has been inconclusive empirical evidence to show the direction of causality between financial development and economic growth. Particularly, this study supports the view of Cline (2015) that the considerable varying empirical results in finance-growth nexus is related to different structural and institutional characteristics of individual economy, or the application of different estimation methodology.

The argument of Calderon and Liu (2003) and Alexiou, Vogiazas and Nellis (2018) have recently created empirical interest by different authors and researchers which is also one of the motivations for this study. Additionally, several existing studies such as Odedokun (1996), Vaithilingam, Guru and Shanmugam (2003), Hao (2006), Kar, Nazlioglu and Agir (2011), Liang and Reichert (2012), Ngouhouo and Moutie (2015), Modebe and Ezeaku (2016), Akpan, Nwosu and Eweke (2017), Oyebowale and Karley (2018) investigate the impact of financial sector development or intermediation on economic growth in different countries with different empirical models. However, none of these studies have considered investigating the influence of bank lending to sectors of the economy on economic growth which remains a gap in existing studies. It is against this backdrop that the current study attempts to make significant contribution to existing studies by extending empirical evidence to investigate the impact of sectoral bank lending on economic growth.

### 1.3 Rationale of the Study

The financial system of any economy comprises of banks and other financial institutions such as stock market and insurance (Mamman and Hashim, 2014). In Nigeria, the banking sector is an integral component of the financial system and the activities of the Nigerian financial system are regulated by the Banks and Other Financial Institutions Act 1991 (BOFIA) as amended in 1997, 1998, 1999 and 2002. The Act was enacted by the National Assembly of the Federal Republic of Nigeria and commenced 20<sup>th</sup> June, 1991 (CBN, 2007). According to Soludo (2009), the Nigerian banking sector has a dominance of the financial system as it accounts for about 90 per cent of the total assets in the sector and about 65 per cent of market capitalization in the Nigeria Stock Exchange market. The role of the Nigerian financial system just like other countries is essential in mobilizing and channeling funds to the real sectors in order to foster growth and development in the Nigerian economy (Mamman and Hashim, 2014).

In Nigeria, the financial sector has undergone structural and institutional changes resulting from restructuring, liberalization and technological progress (Ogujiuba and Obiechina, 2011; Odeleye, 2014) with the aim of developing the required capacity to efficiently perform its financial intermediation role (Odeleye, 2014). Nonetheless, Sanusi (2012) asserts the Nigerian banking sector has been faced with inadequate capital and high non-performing assets which have resulted in frequent distress and collapse of banks in the sector. Hence, the view of Mamman and Hashim (2014)

affirms that the Nigerian banking sector has not significantly contributed to the growth and development of the economy as expected.

As evidence to the aforementioned assertion of Mamman and Hashim (2014), Nigeria has been experiencing hindered economic growth due to financial disintermediation caused by high regulation (Orji, Imelda and Mba, 2015). According to Trading Economics (2017), the annual growth rate of GDP in Nigeria from 1982 to 2017 is on average of 3.93 percent, attaining a high record of 19.17 percent in fourth quarter of 2004 and a low record of -7.81 percent during the fourth quarter of 1983. In 2016, the Nigerian economy slipped into recession after over two decades with a GDP growth of -1.5 percent, a moderate economic recovery of 2.2 percent is projected for 2017 (African Development Bank, 2017). The current devastating economic situation in Nigeria has led to the introduction of Nigeria Economic Recovery and Growth Plan (ERGP) economic intervention plan by the Federal Government; this is to restore economic growth in the medium term: 2017 to 2020 (Templars, 2017).

The motivation underpinning the rationale of this study emanates from the argument of Calderon and Liu (2003) and Alexiou, Vogiazas and Nellis (2018) that there has been little and inconclusive empirical evidence to show the direction of causality between financial development and economic growth. Thus, this study provides an alternative approach to investigate finance-growth nexus. An additional motivation for this study is the view of Oluitan (2012) which postulates that there is little empirical evidence about how bank lending affects economic growth in Nigeria despite sufficient information regarding the Nigerian banking industry. As such, it is against these aforementioned backdrops that the motivation for this study emanates. Additionally, this motivation further highlights the contribution of this study to knowledge and establishes the significance of the study.

As such, the outcome of this study tends to be problem solving by revealing the essential sectors in the Nigerian economy and how economic growth can be enhanced through financial intermediation. Arguably, this study follows the emergence of earlier studies such as Schumpeter (1911), Goldsmith (1969), McKinnon (1973) and Shaw (1973), Robinson (1952) and Patrick (1966).

#### 1.4 Research Aim

Following the rationale of this study, the overall aim of this research is to contribute to existing knowledge by investigating the impact of sectoral bank lending on economic growth in Nigeria. Thus, the aim of this research will be specifically achieved following the study of Odedokun (1996) which argues that studies on role of financial sector on economic growth lack theoretical underpinnings.

#### 1.5 Research Objectives

In order to achieve the aim of this study, the objectives of the research are highlighted below:

- to explore and discuss the bank lending channel and theoretical views on financial systems.
- to explore and review theories of economic growth.
- to develop suitable conceptual framework which shows the relationship between sectoral bank lending and economic growth.
- to investigate the Nigerian economy as a case study with analysis of its sectoral bank lending.
- to develop suitable empirical models for aggregated and disaggregated sectors by building on relevant theories and existing empirical studies.
- to empirically investigate the relationship and causality between sectoral bank lending and economic growth in Nigeria using aggregated or sectors data.
- to empirically investigate the relationship and causality between sectoral bank lending and economic growth in Nigeria using disaggregated or sub-sectors data.
- to proffer suggestions and recommendations on the banking industry and economic growth in Nigeria based on the research findings.

## 1.6 Research Questions

Following the rationale and motivation of this study as earlier highlighted, this study will seek to provide answers using aggregated and disaggregated data to the outlined research questions:

- is there a positive and statistically significant relationship between growth in bank lending to economic sectors and economic growth in Nigeria?
- what is the direction of causality between growth in bank lending to economic sectors and economic growth in Nigeria?
- to what extent does growth in bank lending to economic sectors contribute to economic growth in Nigeria?

## 1.7 Research Hypotheses

Based on theoretical views and existing studies which would be further discussed in chapter two, the research hypotheses for this study are developed into two sets based on relationship and causality as outlined below:

### 1.7.1 Hypotheses Set A

$H_0$  (Null Hypothesis): There is no positive and statistically significant relationship between sectoral bank lending and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a positive and statistically significant relationship between sectoral bank lending and economic growth in Nigeria.

### 1.7.2 Hypotheses Set B

$H_0$  (Null Hypothesis): There is no causality between sectoral bank lending and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a causality between sectoral bank lending and economic growth in Nigeria.

## 1.8 Overview of Research Methodology

Based on the quantitative nature of this study which seeks to investigate relationship among variables, this study ascribes to the deductive research approach and positivism theoretical perspective. For this study, secondary data were obtained from Central Bank of Nigeria (CBN) statistical bulletins and World Bank statistical databases. The time span of this study is longitudinal for the period 1960 (year of independence in Nigeria) to 2017. Furthermore, the collected data were analysed

using Autoregressive Distributed Lag (ARDL) and VAR models on Stata software to provide suitable answers to the highlighted research questions. Be that as it may, chapter three of this thesis has been dedicated to provide comprehensive justification for the chosen methodology and method of this study.

### **1.9 Structure of the Thesis**

Each chapter of this thesis commences with an introduction to clarify what the chapter is about and a chapter summary at the end to summarise what has been achieved or discussed in the chapter. Also, expectation of the next chapter will be identified. In addition to this first chapter, this rest of the thesis includes other six chapters as highlighted hereafter.

Chapter two focuses on review of relevant literature and theoretical framework underpinning the study. As such, this chapter explores bank lending channel and theoretical views on financial systems. Also, the chapter explores theories of economic growth to provide adequate theoretical framework for the research. Additionally, this chapter provides suitable conceptual framework for the study based on bank lending channel, theoretical views of financial financial intermediation theory and theories of economic growth (research objectives one, two and three).

Chapter three provides appropriate discussion and justification for the adopted research methodology and method for the study. Additionally, this chapter develops the suitable empirical models to be investigated in this study and logical steps in analysing collected data. Furthermore, this chapter discusses the ethical considerations, reliability and validity of empirical results (research objective five).

Chapter four focuses mainly on the Nigerian economy by exploring historical background, economic outlook, evolution of Nigerian banking industry, economic sectors in Nigeria and descriptive statistics of empirical data. In this regard, this chapter provides a detailed investigation into Nigeria as the case study of this study (research objective four).

Chapter five focuses on investigating the topic under investigation using aggregated or sectors data by applying statistical methods, interpretation of results and discussion of findings (research objective six).

Chapter six focuses on investigating the topic under investigation using disaggregated or sub-sectors data by applying statistical methods, interpretation of results and discussion of findings (research objective seven).



The last chapter of this thesis is chapter seven. This chapter provides a summary of key findings to generate a conclusion to the research, outlines policy recommendations with implementation strategies, highlights the achievement of study objectives and research questions, outlines contributions of the study to knowledge, identifies limitations of the study, suggestions for further study and final conclusion.

Afterwards, this thesis provides a reference list which includes academic articles, books and other sources used for the research. Additionally, appendices of the research containing statistical outputs generated in the process of data analysis and other information relevant to the research are provided.

### **1.10 Chapter Summary**

This chapter has provided a general introduction to the research. In this regard, the chapter has discussed the rationale and significance of the study, and highlighted the contribution to knowledge. Additionally, the research questions and objectives of the study, an overview of research methodology and structure of the overall thesis have been provided. The next chapter focuses on theoretical framework of the study by discussing the theory of bank lending channel, theoretical views on financial systems, theories and models of economic growth, and conceptual framework of the study.

## CHAPTER TWO

### LITERATURE REVIEW AND THEORETICAL FRAMEWORK

#### 2.1 Chapter Introduction

This chapter provides a review of relevant literature and discusses the theoretical framework underpinning the study. The relevance of this chapter is to fulfil research objectives one, two and three. First, by exploring and discussing the bank lending channel and theoretical views on financial systems, this chapter good theoretical underpinning to investigate relationship and causality between sectoral bank lending and economic growth in Nigeria. Second, by exploring and reviewing theories of economic growth theories, this chapter provides basis for robustness in the empirical models. Additionally, by developing a suitable conceptual framework, this chapter provides detailed understanding and integration of relevant theories and empirical studies.

#### 2.2 The Bank Lending Channel

External finance premium<sup>1</sup> can be influenced through supply shifting of intermediated credit provided in form of loans by commercial banks (Bernanke and Gertler, 1995). As such, the bank lending channel focuses on the view that banks perform a unique role as a dominant source of intermediated credit within the financial system. Hence, banks are suitable in solving the problem of asymmetric information in credit markets (Bernanke and Gertler, 1995; Mishkin, 1996). In this regard, proponents of bank lending channel such as Bernanke and Blinder (1988) and Kashyap and Stein (1994) postulate that lending decisions by banks influence the transmission of monetary policy, autonomously of the cost of capital.

In normal times, the availability of bank credit is endogenous to the process of monetary process (Lown and Morgan, 2002) and its relationship with the real economy is determined by the degree of financial penetration existing in an economy (Afrin, 2017). According to Gambacorta and Marques-Ibanez (2011), the role of banks in creation and extension of credit in the transmission mechanism process makes the banking sector a possible source of financial friction. Thus, credit is regarded as an

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<sup>1</sup> External finance premium is defined as the difference in cost between externally raised funds (through issuing equity or debt) and internally generated funds (through retained earnings) (Nilsen 2002).

essential macroeconomic variable which boosts activity in a real economy through the bank lending channel (Afrin, 2017).

Accordingly, a reduction in bank reserves which causes disruption in supply of bank loans inexplicably affects firms without access to credit markets in switching to other funds (Bernanke and Gertler, 1995; Nilsen, 2002). Hence, bank-dependent borrowers such as SMEs may not be plainly shut off from credit, but almost certain of incurring costs associated with seeking for a new lender and establishing a new credit relationship (Bernanke and Gertler, 1995). Additionally, Nilsen (2002) and Golodniuk (2006) assert that small firms with high dependence on bank loans without any possible access to alternative financing may be forced to reduce current production or desired investment for a specific interest rate.

In this regard, reduction in supply of commercial bank credit in relation to other forms of credit has a potential to reduce real activity and increase external finance premium (Bernanke and Gertler, 1995). This is expressed schematically as below:

$$\text{Bank credit} \downarrow \rightarrow \text{real activity} \downarrow \text{ external finance premium} \uparrow \quad (2.1)$$

In Nigeria, evidence of this assertion emerges in the studies of Obamuyi (2010), Terungwa (2012), Luper (2012), Ogbo and Nwachukwu (2012), Eferakeya (2014), Aminu and Shariff (2015) and Adedeji et al. (2018) which reveal that lack of accessibility to finance has hindered the growth of SMEs in Nigeria.

Early work on the lending view have focused on two logically discrete issues: whether monetary policy partly works through changing relative costs of open-market paper and costs of bank loans, and whether such shifts in the supply of bank loan are accompanied by deviations in the extent of non-price credit rationing (Kashyap and Stein, 1994). The lending view commenced with the study of Roosa (1951) as cited in Kashyap and Stein (1994) based on 'availability doctrine'. As such, Roosa (1951) argues that changes in interest rate caused by open market operations<sup>2</sup> (OMO) of central banks has an impact on the ability or disposition of lenders to make loanable

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<sup>2</sup> OMO is a quantitative monetary policy tool used by central banks to increase or decrease money supply through buying and selling of government securities in financial (open) markets.

funds available to borrowers. This is expressed schematically for expansionary<sup>3</sup> and contractionary<sup>4</sup> money policies in equations 2.2 and 2.3 respectively as:

**Expansionary monetary policy ( $M\uparrow$ ) → central bank buys securities in open market operations → money supply $\uparrow$  → interest rates $\downarrow$  → loanable funds $\uparrow$  (2.2)**

**Contractionary monetary policy ( $M\downarrow$ ) → central bank sells securities in open market operations → money supply $\downarrow$  → interest rates $\uparrow$  → loanable funds $\downarrow$  (2.3)**

Therefore, OMO action of central banks achieves its significance through the decisions and position of lenders. Following the argument of Roosa (1951), the significance of bank credit remains a hotly debated topic among scholars with a view of refinement. Consequently, the bank lending channel seems to be the most contentious monetary policy transmission mechanism. Notably, the studies of Tobin and Brainard (1963), Brunner and Meltzer (1963) and Brainard (1964) contribute to the study of Roosa (1951) by proposing models which include imperfect substitutability of different assets including bank loans as a vital feature. Hence, the role of credit availability in form of financing to economic units at some rate requires specialised organisation and knowledge which is exclusively carried out by specialized institutions regarded as financial intermediaries (Modigliani, 1963).

Additionally, the study of Blinder (1987) offers a model which considers credit rationing as an operative mechanism and no substitute for bank loans. In this regard, Blinder (1987) accentuates that firms may need credit to produce goods in order to meet notional supply. However, if the required credit is unavailable, this may lead to 'failure of effective supply' where firms are not producing up to what they can sell. Hence, recessions are initiated with supply failure rather than decline in demand, this may lead to increase in prices following contraction in economic activity. This supply of credit effect is expressed schematically in equation 2.4.

**Supply of credit $\downarrow$  → production $\downarrow$  → economic activity $\downarrow$  → general prices $\uparrow$  (2.4)**

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3 Expansionary or loose monetary policy refers to the policy actions undertaken by monetary policies in sluggish economic situations or recession to stimulate economic activities by increasing money supply, borrowing and investment usually through lowering interest rates.

4 Contractionary or tight monetary policy is reactive to inflationary pressures as it involves actions tailored towards curbing economic activities by reducing money supply, borrowing and investment mainly through increasing interest rates.

On the other hand, when demand for credit increases, the banking system creates a credit multiplier in the economy with firms borrowing more to expand production. As economy activity expands, bank deposits increases due to higher transaction balances. Concurrently, supply of bank credit increases in order to meet increase in demand and supply of production (Blinder, 1987). This is expressed schematically in equation 2.5.

$$\text{Demand for credit}\uparrow \rightarrow \text{credit creation by banks}\uparrow \rightarrow \text{production}\uparrow \rightarrow \text{economic activity}\uparrow \rightarrow \text{bank deposits}\uparrow \rightarrow \text{supply of bank credit}\uparrow \quad (2.5)$$

Building on the studies of Tobin (1969), Brunner and Meltzer (1972) and Blinder (1987), the study of Bernanke and Blinder (1988) contributes significantly to the lending view debate by discarding the assumption of perfect substitutability and ignoring credit rationing to form a model of three assets: money, publicly issued bonds and intermediated loans. Hence, the banking sector performs two special functions: creation of money and making loans which household sector cannot perform. According to Kashyap and Stein (1994), the three-asset world enhances the transmission of monetary policy through impact of interest rate in the bond-market and independent impact on the supply of intermediated loans. Furthermore, the model of Bernanke and Blinder (1988) is based on the assumption that borrowers and lenders tend to make a choice between bonds and loans considering the interest rates on the two credit instruments.

The main assumption of Bernanke and Blinder (1988) model is that the replacement of lost retail deposits with other sources of funds, for instance, issuing new equity or certificate of deposits tends to be difficult for banks. As identified by Kashyap and Stein (1994), the model of Bernanke and Blinder (1988) posits that three essential conditions must exist for there to be a unique bank lending channel of monetary policy transmission as highlighted hereafter.

First, there must not be perfect substitution between intermediated loans and open-market bonds on the liability side of the balance sheet of some firms. Therefore, this condition dismisses the application of capital-structure invariance proposition of Modigliani and Miller (1958) in order to ensure firms have the ability to offset shortage in loan supply by borrowing directly from household unit in public markets. Second, through alteration in level of reserves available to the banking sector, central banks must have the ability to influence the supply of intermediated loans. This condition posits that, financial intermediaries must not be able to wholly shield lending activities

from shocks to reserves, through pairing net holding of bonds or switching from deposits to other less reserve-intensive sources of finance (such as commercial paper, certificates of deposits and equity). Third, there must be existence of some form of imperfect price adjustment mechanism to prevent any monetary shock from being neutral. This condition follows that; frictionless adjustment in prices will result to change in nominal reserves and a corresponding change in prices. Therefore, both corporate and bank balance sheets will remain unchanged in real terms which indicates no real effects of monetary policy through either lending view or money view.

Be that as it may, Kashyap and Stein (1994) further highlights that if either of the first two conditions fails to exist, loans and bonds will become effective perfect substitutes which signifies pure money channel of monetary policy transmission. In the failure of first condition, cost differentials between loans and bonds will be totally arbitrage away by Modigliani-Miller proposition. If second condition fails to hold, the arbitrage will be done by financial intermediaries. In either case, there is a net indication that in equilibrium, loans and bonds will always be identically priced.

In line with the ongoing, Lerskullawat (2017) asserts that the bank lending channel of monetary policy transmission is fairly low in large, highly liquid and capitalized banks in comparison to small, less liquid and weakly capitalized banks. This assertion is based on the research outcome of Halvorsen and Jacobsen (2016), Kim and Sohn (2017) and Oyebowale (2020) which reveal that bank capital matters in the lending channel of monetary policy. Hence, highly capitalised banks have fairly high reputation, liquidity, higher creditworthiness and better risk diversification attitude than weakly capitalized banks. Consequently, this yields greater opportunities for smaller firms with financial constraint to raise capital using external finance (Altunbas, Gambacorta and Marques, 2009; Ferreira, 2010). Thus, this weakens the impact of lending channel on such firms (Lerskullawat, 2017).

In line with the assertion of Altunbas, Gambacorta and Marques (2009), the view of Lerskullawat (2017) affirms that the development of financial market which involves capital market and banking sector development has an influence on the bank lending monetary transmission process. The assertion of Lerskullawat (2017) also builds on the view of Gertler and Rose (1996) which postulates that the level of financial intermediation measured by size and liquidity of financial institutions can be increased by development of the banking sector. Additionally, development in capital market can increase financial market liquidity leading to higher bank loans and increasing

opportunities for banks to seek external funding sources (Gertler and Rose, 1996; Ferreira, 2010).

However, Kashyap and Stein (1994) accentuates that the importance of the lending view began to fall out of favour during the 1960s with empirical evidence from the studies of Romer and Romer (1989), Favero, Giavazzi and Flabbi (1999) and Simpasa, Nandwa and Nabassaga (2014). The earlier study of Bernanke and Blinder (1992) reveals that policy shocks systematically affect the portfolio of banks which money channel theories fail to explain. Additionally, the work of Bernanke and Blinder (1992) further reveals that abrupt post-tightening effects of monetary policy decline on bank balance sheets leading to hold back in real activity and lending is caused by securities.

Therefore, it becomes challenging to unravel whether firms are affected by hold back in real activity and related reduction in demand for credit or from the reduction in supply of loan as a prediction of the bank lending channel (Bernanke and Blinder, 1992). As such, Kashyap and Stein (1994) further argues that the issue with the lending view is attributable to unnecessary heavy reliance on credit-rationing system without providing a satisfying theoretical role to support the existence of such rationing.

Building on the study of Bernanke and Blinder (1992), Kashyap, Stein and Wilcox (1993) provides an ingenious solution to the identification issue using aggregate data. According to Kashyap, Stein and Wilcox (1993), during monetary contractions, firms issue more commercial papers as a substitute for credit to meet up reduction in loan supply. Thus, demand for loan is not reduced by a hold back in real activity. However, the assertion of Kashyap, Stein and Wilcox (1993) led to notable scholarly attention of Gertler and Gilchrist (1994) and Oliner and Rudebusch (1996) using disaggregated data by analysing mix of bank and non-bank disjointedly for smaller and larger firms.

The studies of Gertler and Gilchrist (1994) and Oliner and Rudebusch (1996) question existence of the lending channel and argue that a monetary contraction results to a broad rationalisation of funds to larger firms at the detriment of smaller firms. This is because smaller and larger firms demonstrate unique behaviour during monetary contraction. As such, larger firms accelerate loans from banks while smaller firms undergo reduction in growth of loans (Gertler and Gilchrist, 1994). Also, only larger firms can issue commercial papers during tight monetary policy and not smaller firms (Oliner and Rudebusch, 1996).

Furthermore, a remarkable criticism by Oliner and Rudebusch (1996) for the study of Kashyap, Stein and Wilcox (1993) emerges in the use of aggregated data. In this regard, Oliner and Rudebusch (1996) argues that using aggregated data debt mix cannot probably capture shifts in comparative importance of bank and non-bank finance for smaller firms. This is because smaller firms do not issue commercial paper and the debt mix includes all forms of short-term non-bank debt as substitute for bank debt which remains a critical issue in Kashyap, Stein and Wilcox (1993). Hence, the use disaggregated data using manufacturing sector in the U.S in the study of Oliner and Rudebusch (1996) found little evidence for changes in debt mix for smaller or larger firms during tight monetary policy. Rather, the study reveals that the main impact of monetary contraction is shifting of all types of finance from small firms to large firms. Consequently, this shift generates a reduction in aggregate bank loan due to less reliance on bank debt by larger firms in relation to smaller firms which do not support the existence of bank lending channel (Oliner and Rudebusch, 1996).

In response to the study of Oliner and Rudebusch (1996) which finds evidence to support the view of Romer and Romer (1990) by arguing the view of Kashyap, Stein and Wilcox (1993), the debate on identifying shifts in demand of loan from shifts in supply of loan continues in the study of Kashyap, Stein and Wilcox (1996). As such, Kashyap, Stein and Wilcox (1996) argues that the rise in issue of commercial paper during tight monetary policy in relation to bank loans remains valid even with disaggregated data. In light of this, Kashyap, Stein and Wilcox (1996) provides an interpretation to the findings of Oliner and Rudebusch (1996) that during tight monetary policy, loan supply to smaller firms is reduced.

Thus, to access other sources of finance, these smaller firms extend their account payable. Concurrently, this means increase in demand for account receivables at larger firms, which requires raising external finance through the issue of commercial paper to meet demand. Hence, Kashyap, Stein and Wilcox (1996) postulate that the surge in issue of commercial paper by large firms indicate a partial and imperfect way of overhauling the role of banks in the intermediation process which has been compromised by a tight monetary policy. Hence, Nilsen (2002) provides further evidence to support the redistribution hypothesis which posits that during contraction of monetary policy, larger and more liquid suppliers channel funds through the use of trade credit as accounts receivable to smaller or less liquid customers, as an alternative source of funding.



However, a different phase of investigating the existence of bank lending channel is through examining the impact of fluctuation in availability of bank loans on aggregate spending. Over many decades, this phase has also drawn scholarly attention which led to different views and inconclusive argument. For instance, early studies of Hancock and Wilcox (1998), Peek and Rosengren (2000), Kashyap and Stein (2000) support the existence of bank lending channel in the U.S, and that the transmission of monetary policy is conducted through small and undercapitalised banks. Afterwards, several empirical studies have been conducted in different countries to examine bank lending channel.

From the country-level perspective, Ono (2015) supports the existence of bank lending channel in Russia using bank-level data for the period 2005 to 2012. Ibarra (2016) reveals the existence of bank lending channel in Mexico for the period 2004 to 2013 which amplifies effects on the traditional interest rate channel. In France, the study of Chouchene, Ftiti and Khiari (2017) among 85 banks for the period 2005 to 2020. The study shows that during the period of financial crisis, the bank-to-bank lending of French banks reduced significantly. Hence, the outcome of Chouchene, Ftiti and Khiari (2017) implies that financial crises affect the existence and effectiveness of the bank lending channel. The outcome of Chouchene, Ftiti and Khiari (2017) is supported by the study of Mishra and Burns (2017) which reveals that monetary policy shocks have persistent impacts on bank lending in India. However, the study of Reddy and Bhardwaj (2019) argues that bank lending channel has become weaker due to development of financial markets in India.

Chileshe (2018) using bank-level panel data in Zambia for the period 2005Q1 to 2016Q4 indicates the existence of bank lending channel in Zambia. The study of Matousek and Solomon (2018) using a sample of 23 banks in Nigeria for the period 2002 to 2008 shows that the impact of bank lending channel in Nigeria has been improved by restructuring activities of the central banks. Shokr and Al-Gasaymeh (2018) shows that the bank lending channel is relevant in Egypt using panel data of 34 commercial banks for the period 1996 to 2014. Furthermore, Abuka et al. (2019) using microdata in Uganda shows that monetary contraction affects supply of bank credit, which weakens bank lending channel. Naiborhu (2020) finds evidence to support the existence of bank lending channel for large and small banks in Indonesia for the period 2005 to 2016.

From the cross-country perspective, Khosravi (2015) reveals existence of bank lending channel through bank liquidity in EU's 10 new member states in accordance with Treaty of Association from 2004 to 2013- Cyprus, Poland, Malta, Estonia, Hungary, Czech Republic, Slovakia, Lithuania, Latvia and Slovenia. Brei and Schclarek (2015), compares bank lending channel between government-owned banks and private-owned banks using 764 major banks in 50 countries for the period 1994 to 2009. The study finds robust evidence that the lending of government-owned banks increases during crises more than normal times, while the lending of private banks decreases. The study of Lerskullawat (2017) in five ASEAN countries (Malaysia, Thailand, Indonesia, Singapore and Philippines) over the period 1999 to 2011 provides evidence to support the existence of bank lending in all the five ASEAN countries.

The study of Sanfilippo-Azofra et al. (2018) in 31 developing countries reveals that bank lending channel is effective in countries with more developed financial systems, after the financial crisis. Hamid and Yunus (2020) finds evidence of effective bank lending channel using 328 banks in the ASEAN region for the period 2009 to 2015. Denderski and Paczos (2020) using 453 banks in Central and Eastern European economies for the period 1998 to 2012 reveals that only domestic banks adjust lending to changes in monetary policy, while foreign banks do not adjust their lending.

Based on the reviewed empirical studies on bank lending, it can be deduced that the bank lending channel is effective in different countries, but it may appear weaker in developing countries. In this regard, this study argues that existence of bank lending channel is based on policy implementation of monetary authorities and diverse economic situations among countries. Additionally, this study argues that methodological choices such as type and time span of data, availability of data, selected proxy for measuring the variables under investigation and statistical methods of data analysis, can cause diverse outcomes in empirical studies.

The view of Bernanke and Gertler (1995) argues that the bank lending channel seems controversial. On the one hand, institutional changes over the years have made bank lending channel traditionally less plausible (Bernanke and Gertler, 1995). Additionally, as banks have lost their market share to financial markets and other intermediaries (Himmelberg and Morgan, 1995), the earlier view of Edwards (1993) regards the perception that banks are special as 'obsolete'. On the other hand, Bernanke and Gertler (1995) postulates that certain other developments in financial systems may

have amplified the importance of bank lending channel. In a similar vein, the view of Himmelberg and Morgan (1995) argues that bank lending is still a special transmission mechanism of monetary policy.

### **2.3 Theoretical Views on Financial Systems**

The main role of the financial system (financial markets and financial institutions) in all economies is to enhance economic growth through efficient allocation of capital and encouraging savings which leads to management of risks and facilitation of transactions (Moradi, Mirzaeenejad and Geraeenejad, 2016). As such, Seven and Yetkiner (2016) accentuates that the influence of the financial system on economic growth can be achieved through credit, the financial markets or both. In this regard, there is substantial country-specific discrepancy in the elements of the financial system with the ability to channel resources to investment opportunities from savers (Aghion, Howitt and Mayer-Foulkes, 2005). Thus, Lee (2012) postulates that theoretical and empirical literatures suggest that financial systems may enhance long-run economic growth by examining the relationship between financial sector development and economic growth.

However, there is yet to be a consensus regarding the impact of either banks or stock markets on economic growth due to shortcomings of the financial system (Cihak et al., 2012) and conflicting theoretical predictions (Seven and Yetkiner, 2016). As such, the study of Seven and Yetkiner (2016) identifies two weaknesses in existing literatures on financial system and economic growth. First, there are no direct measures to ascertain the extent at which the role of financial system is successfully achieved. Thus, empirical literatures rely on size of stock markets and banking sector as financial proxies based on availability across countries. Such proxies fail to meet the requirements in cross-country literatures, particularly for less wealthy countries. Second, there is no consensus to form an argument for the selection of appropriate variables for measuring financial development. By and large, four distinct theories of financial structure have been proposed to show the comparative advantages of different financial systems as discussed henceforth.

### 2.3.1 Market-based View

Since the inception of the 19<sup>th</sup> century, there have been arguments by several economists to support that bank-based systems are better in savings mobilization, identification of good investments and exertion of sound corporate control in weak institutional environments (Korkmaz, 2015). This unresolved argument emanates from Schumpeter in 1911 which supports the finance-growth postulation. The view of Schumpeter (1911) as cited in Nyasha and Odhiambo (2014) argues that the services provided by banks as financial intermediaries such as mobilization of savings, facilitating financial transactions, evaluation of projects, monitoring managers and management of risk are important for technological innovation and economic development. Thus, the development of financial intermediaries concurrently impacts on technical change and growth in productivity through efficient allocation of savings to entrepreneurs (Liang and Reichert, 2012).

According to Lee (2012), the proponents of the market-based or direct finance view argues that financial markets help to reduce intrinsic inefficiencies associated with banks in enhancing economic growth. An early study of Arrow and Debreu (1954) supports the significance of market-based view over bank-based view by building on market equilibrium proposed by Walras' Law<sup>5</sup>. In this regard, Arrow and Debreu (1954) argues that the Walras' law fails to provide conclusive arguments to show a solution for market equilibrium equation which has a relation to problems of welfare or normative economics.

As such, the model of Arrow and Debreu (1954) provides a better insight into existence of equilibrium in the market by considering the circular flow of income and forming an integrated model of production and consumption. Hence, the study highlights two theorems for existence of a competitive equilibrium. First, every individual should possess certain positive quantity of every product available for sale. The second theorem focuses on labour with two properties: each individual has the ability to supply certain positive amount of at least one kind of labour, and such kind of labour should have positive usefulness in the production process of required commodities. In light of this, the study of Arrow and Debreu (1954) advocates for

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<sup>5</sup> Walras' Law is an economic theory which reinforces existence of equilibrium in the market where the value of excess demand is zero. In this regard, demand for goods by consumers must equal supply of goods by producers. As such, each consumer in the market acts to maximise utility while each producer is focused on maximising profit, which enhances perfect competition as the prices paid and received by each consumer and producer are perceived independent of their choices (Arrow and Debreu 1954).

market-based view by assuming that financial markets are complete and perfect, allocation of resources is Pareto-optimal and existence of limited capacity for financial intermediaries in enhancing welfare of the society.

Furthermore, the market-based view is associated with Modigliani-Miller theorem<sup>6</sup> which enables households to create portfolios in order to offset the position of intermediaries and making intermediation unable to create value (Fama, 1980). According to Allen and Santomero (1997), a traditional criticism of standard market-based view is that vast number of securities are required for the view to prevail except in some special situations. However, the increasing development of time techniques for option pricing models with its extension to general equilibrium theory has negated such criticism.

### **2.3.2 Bank-based View/ Theory of Financial Intermediation**

The theory of Arrow and Debreu (1954) emphasises that the function of financial intermediaries is relevant as a result of imperfections in financial markets. As such, financial intermediaries tend to play a significant role during market imperfections. However, as soon as financial markets are perfect, financial intermediaries become redundant. This is attributable to the fact in a perfect market, savers and investors possess the vital information to directly seek each other without costs. Hence, in a world when there is a tendency of greater market efficiency and transparency, the impact of financial intermediaries is endangered. Nonetheless, Scholtens and Wensveen (2000) argues that financial intermediaries appear to survive despite rapid increase of globalization, revolution of information and increasing prominent role of public markets.

A later study by Klein (1971) emphasises the importance of commercial banking in financial intermediation and monetary transmission process and proposed a simple microeconomic model of banking firm. As such, the proposed model is based on the impact of diverse forms of regulatory policy on the uniqueness of banking firm as a financial intermediary since information asymmetries and transaction costs would not exist in a complete and perfect market. In response to this, Benson and Smith (1976) argues that the role of financial intermediaries is essential due to existence of several

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<sup>6</sup> Modigliani-Miller theorem advocates capital structure irrelevancy theory which suggests that the total market value of a firm is independent of its capital structure.

imperfections in the market arising from high search and trading costs, regulation and asymmetric information.

In the view of Benson and Smith (1976), financial intermediaries possess a comparative advantage of reducing transaction cost through: providing information and cost-effective access to finance to customers, economies of scale based on specialization, and low search costs involved in matching borrowers and lenders. In contribution to the view of Arrow and Debreu (1954), the study of Fama (1980) argues that when the function of banks as financial intermediaries get competitive, the portfolio management activities of issuing deposits and purchase of assets becomes irrelevant which reveals the Modigliani-Miller theorem. Hence, households can create portfolios to offset the role of intermediaries and the financial intermediation process cannot generate value.

To further support the bank-based view, Diamond (1984) develops a financial intermediation theory based on 'delegated monitoring' view. In this regard, the theory is based on minimum cost of producing information or net cost advantage of intermediaries which is essential for resolving incentive problems between borrowers and lenders. Hence, Diamond (1984) asserts that diversification is essential for intermediaries to ensure net cost advantage of intermediation is sustained when the economy is risk neutral. As such, diversification in context of financial intermediation can be categorised into two: traditional diversification which involves sub-division of independent risks and diversification by adding more independent risks of a specified extent. As such, financial intermediaries are saddled with the delegated task of monitoring financial agreements between borrowers and lenders.

In response to the market-based theory proposed by the model of Arrow and Debreu (1954), a renowned study of Allen and Santomero (1997) reviews the state of financial intermediation theory with an attempt to provide reconciliation with the observed behaviour of institutions in contemporary capital markets. As such, the study of Allen and Santomero (1997) argues that theories on financial intermediation hugely focus on products and services which are of decreasing relevance to intermediaries. Hence, such theories are incapable to account for activities which have become the focus of several institutions. In this regard, the study of Allen and Santomero (1997) asserts that the role of intermediaries in the reduction of frictions associated with transaction costs and asymmetric information as emphasised in literatures appears too strong.

In line with the ongoing, the study of Allen and Santomero (1997) suggests a view on financial intermediaries which focuses on two of their roles. First, financial intermediaries are facilitators of risk transfer as they increasingly deal with complex financial instruments and markets. In this regard, the role of risk management has become a main area of intermediation which traditional intermediation theory does not explain. Second, Allen and Santomero (1997) argue that facilitation of participation in the financial sector is an essential service provided by financial intermediaries. Hence, financial intermediaries help in reduction of participation costs which are attributable to effective learning of using markets in day-to-day participation. As such, this plays an essential role in understanding changes in the markets.

In line with the foregoing, the study of Scholtens and Wensveen (2000) supports the postulations of Allen and Santomero (1997) in a functional perspective rather an institutional perspective since various definitions of financial intermediaries are used by different countries. However, Scholtens and Wensveen (2000) contributes to the financial intermediation theory by providing a critique on the work of Allen and Santomero (1997) which is based on risk management and participation costs. As such, Scholtens and Wensveen (2000) argues that some of the views of Allen and Santomero (1997) go too far while some do not go far enough. The paradigm in the theory of financial intermediation formalized in Arrow-Debreu model focuses on the classical idea of perfect market with a central reference to monopolistic competition theory, neo-classical growth theory and portfolio investment theory (Scholtens and Wensveen, 2000).

In this regard, Scholtens and Wensveen (2000) supports the view of Allen and Santomero (1997) that the role of risk transformation and risk management is the root of financial intermediation. However, Scholtens and Wensveen (2000) argues that Allen and Santomero (1997) associates risk management function of financial intermediaries to increasing significance of new sophisticated financial instruments traded in new financial markets. Thus, this overlooks the traditional role of banks in process of transferring risk through taking deposits from savings surplus units (depositors) and extending credit to savings deficit units (borrowers) with risky business. As such, Scholtens and Wensveen (2000) further stresses that the existence of transaction costs and information asymmetries do not provide a comprehensive explanation of why depositors choose to make deposits in banks and do not engage in selection of investors themselves.



According to Allen and Santomero (1997), participation costs are important to understand the activities of financial intermediaries particularly on the role of risk management. In response to this assertion, Scholtens and Wensveen (2000) argues that participation cost is unable to explain drastic changes in the financial sector such as rapid use of financial derivatives in the markets and dramatic increase in mutual funds. As such, Scholtens and Wensveen (2000) highlights that the theory of financial intermediation should depart from the paradigm of perfect market which is hampered by incidental imperfections, and presume a more dynamic process where market differentiation and financial innovation prevail.

In this dynamic process, financial institutions do not act as intermediation agents between savers and depositors. Consequently, market imperfections such as participation costs and information asymmetric can be alleviated. In this regard, financial intermediaries are independent parties in the market which generate financial products and adds value to clients through transformation of risks, liquidity, scale, term and location (Scholtens and Wensveen, 2000). Therefore, the concept of value creation as introduced by Michael Porter in 1985 form the basis for an alternative approach of financial intermediation which is still driven by risk and risk management (Scholtens and Wensveen, 2000; 2003). In line with the literary contributions to financial intermediation theory, the study of Scholtens and Wensveen (2003) further extends this debate by highlighting the modern theories of financial intermediation under three approaches: information problems, transaction costs and regulatory factors, which are discussed henceforward.

#### **2.4.2.1 Modern Theories of Financial Intermediation Information Problems**

The information asymmetries argument of financial intermediation can be *ex ante* in nature by generating adverse selection, can be interim by generating moral hazard and can be *ex post* by yielding auditing state verification process and enforcement. In this regard, financial intermediaries tend to partially prevent transaction costs associated with market imperfections generated by information asymmetries. For instance, the view of Leland and Pyle (1977) regards financial intermediaries as coalitions of information sharing. By the same token, the view of Diamond and Dybvig (1983) interprets banks as coalitions of depositors which help households provide insurance against peculiar shocks causing adverse effects on their liquidity position. Also, Diamond (1984) affirms that coalitions of financial intermediaries can help to



attain economies of scale as they serve as delegated monitors of deposits by ultimate savers.

Progressively, Scholtens and Wensveen (2003) highlights that literatures on information asymmetry approach focus on bank-borrower and bank-lender relationship. In the former, the information considered is that which is reasonably and easily available during the process of loan origination. This will include elements of 5Cs of credit. As such, the key themes in this category are: monitoring and screening role of banks, adverse selection problem (Akerlof, 1970), credit rationing (Stiglitz and Weiss, 1981), moral hazard problem (Stiglitz and Weiss, 1983) and verification problem (Gale and Hellwig, 1985).

On the other hand, the bank-lender view involves transactions-based and relationship lending (Scholtens and Wensveen, 2003) which focuses on using data generated by the bank over the relationship period with the borrower (Berger and Udell, 2002). As such, the key themes in bank-lender view are the occurrence and prevention of bank runs, with its economic consequences (Diamond and Dybvig, 1983). Additionally, Diamond and Rajan (2001) asserts that in bank-lender relationship, the models which reveal competition among banks for deposits in relation to profitability and lending policy is also another avenue.

In relation to information asymmetry, the study of Petrella and Resti (2013) reveals that the implementation of stress test on ninety (90) banks in the EU provided valuable information for investors which enhanced bank transparency and reduced information asymmetry. Similarly, the study of Quijano (2014) examines if Supervisory Capital Assessment Program (SCAP) or 2009 bank stress test help in mitigating information asymmetry problem among nineteen (19) largest bank holding companies in the U.S. The study reveals that implementation of SCAP in the U.S help to reduce problem of information asymmetry. In a different dimension, Sihombing and Pangaribuan (2017) examines the effect of corporate governance structure and disclosure on information asymmetry in Indonesian banking industry. The study reveals that good implementation of corporate governance structure and disclosure will help reduce information asymmetry in Indonesian banking industry.

Building on the view of Lys, Naughton and Wang (2015) which affirms that information asymmetry has essential implications for corporate social responsibility (CSR), the study of Cui, Jo and Na (2018) empirically investigates the relationship between CSR and information asymmetry in the U.S. The study reveals that CSR engagement is a

tool to enhance information environment and help in reputation-building of firms. Hence, engaging in CSR can help to reduce the problem of information asymmetry. The outcome of the study of Cui, Jo and Na (2018) supports the view of Fieseler (2011) which affirms that CSR improves communication to shareholders regarding financial matters.

### **Transaction Cost**

The second approach to theory of financial intermediation highlighted by Scholtens and Wensveen (2003) is transaction cost approach formalised in studies of Benson and Smith (1976) and Fama (1980). This approach does not disapprove the assumptions of perfect markets like information problems but it is based on non-convexities within exogenous transaction technologies (Scholtens and Wensveen, 2003). In this regard, financial intermediaries exploit economies of scale in transaction technology by acting as coalitions of individual borrowers or lenders. As such, the notion of the transaction costs approach encompasses monetary or exchange costs (Tobin, 1963; Fischer, 1983), search, monitoring and auditing costs (Benson and Smith, 1976).

Thus, the role of financial intermediaries according to this approach is to engage in qualitative asset transformation by transforming specific financial claims into other types of claims (Scholtens and Wensveen, 2003). In this regard, financial intermediaries offer liquidity as a main function for savers, investors and corporate customers (Pyle, 1971) and opportunities for diversification for personal and institutional financing (Hellwig, 1991).

### **Regulatory Factors**

The third approach to theory of financial intermediation is focused on regulation of savings and production of money in financing the economy (Fama, 1980; Merton, 1995). Regulation affects liquidity and solvency of financial institutions (Scholtens and Wensveen, 2003) which is explained by the legal-based view portending that regulation is an essential factor that forms the financial economy (La Porta et al., 1998). Financial regulations are often regarded as utterly exogenous to the financial sector. Nonetheless, the activities of financial intermediaries intrinsically demand for regulation (Scholtens and Wensveen, 2003).

The need for regulation is attributed to the role of banks in qualitative asset transformation which inherently makes them illiquid and insolvent. Additionally, money and its value, which is the pillar of the financial sector is hugely determined

and defined by the safety and soundness of the overall financial system (Scholtens and Wensveen, 2003). Hence, regulation of the financial industry is required mainly to enact financial, industrial and fiscal policies by regulating authorities (Boot and Thakor, 1997a).

In this regard, financial history reveals an obvious traditional sovereign or modern specialised interplay between regulators, financial institutions and markets (Kindleberger, 1993 as cited in Scholtens and Wensveen, 2003). Hence, regulation of intermediaries, particularly banks is expensive as it involves direct costs of recruiting supervisors and general administration, and indirect costs associated with distortions created by prudential and monetary supervision (Scholtens and Wensveen, 2003). Furthermore, the view of Scholtens and Wensveen (2003) stresses that there is existence of a true vibrant relationship between regulation and financial production. This is so because regulation may produce rents for regulated intermediaries as it may hinder market entry and exit.

In relation to regulation, the study of Tchana (2012) investigates the welfare cost of banking regulation in the U.S measured by capital adequacy requirements. The study reveals that portfolio of banks is efficient in competitive equilibrium. Additionally, the study reveals that banking regulation is detrimental to economic growth as it constrains banks to adjust their investment portfolio to safer and less productive assets. However, the study further reveals that optimal capital adequacy requirement can help to prevent banking crisis. Hence, regulation is welfare improving for population in crisis period and welfare reducing for population outside crisis period.

By the same token, the study of Tchana (2014) investigates the effectiveness of banking regulation in preventing banking crisis in Indonesian banking system. The outcome of the study is in fourfold: restriction of entry in the banking sector reduces the duration and chances of crisis, increase reserve requirements reduce the duration of crisis but increases the chance of banking instability, existence of deposit insurance increases stability in the banking system and reduces the duration of crisis, and capital adequacy requirements enhances stability and reduces duration of expected banking crisis.

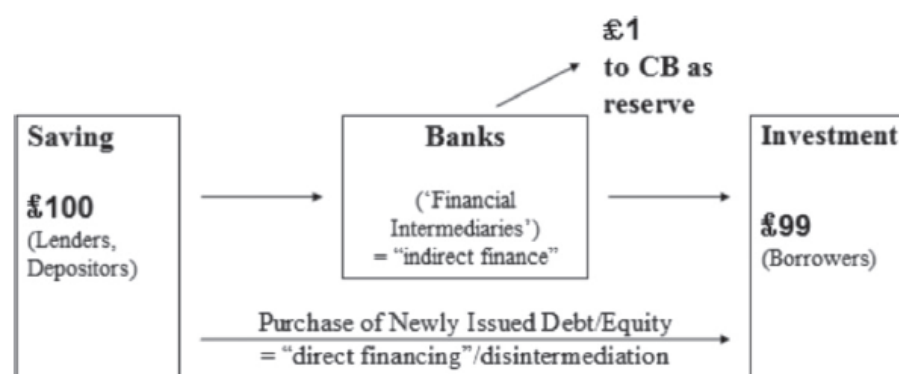
In addition to the aforementioned studies, the study of Triki et al. (2017) investigates the relationship between regulation and bank efficiency among forty-six (46) African countries. The study reveals that the effect of bank regulation in Africa highly depends on the size and risk degree of the bank. Also, the study reveals that more stringent

entry restrictions increase efficiency of large banks, while exit restrictions reduce efficiency of small banks. Furthermore, the study reveals that increase transparency requirements and price controls are detrimental to small banks while more stringent capital requirements enhance the efficiency of large and low risk banks.

In line with the ongoing, the study of Manish and O'Reilly (2018) reveals that banking regulation is associated with higher income inequality which contradicts public interest theory of regulation<sup>7</sup> but supports economic theory of regulation<sup>8</sup>. This is so because regulators are vulnerable to being captured by regulated firms. In this regard, the research outcome of Manish and O'Reilly (2018) provides evidence to support the assertion of Beck et al. (2008) which states that regulation can cause greater income inequality through entry restriction into the banking industry.

The theory of financial intermediation expressed in Figure 2.1 is the present dominant theory of banking which holds that banks serve as financial intermediaries just like other non-bank financial institutions by gathering deposits and lending out (Werner, 2016). In other words, banks engage in creation of liquidity by borrowing short and lending long (Dewatripont, Rochet and Tirole, 2010) which implies that banks borrow with short maturities from depositors and lend at longer maturities to borrowers (Werner, 2016).

**Figure 2.1: Theory of Financial Intermediation**



**Source: Werner (2005)**

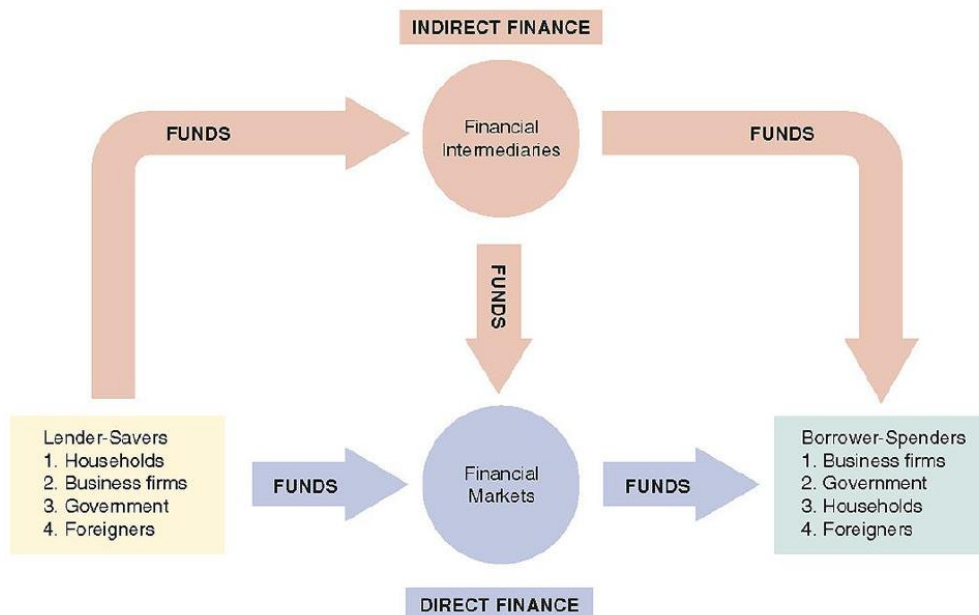
<sup>7</sup> Public interest theory of regulation posits that regulation should seek the protection and benefit of the general public (Hantke-Domas, 2003).

<sup>8</sup> Economic theory of regulation posits that interest groups can influence the outcome of a regulatory process through provision of financial and other forms of support to regulators or politicians.

### 2.3.3 Market-based versus Bank-based View

Based on ongoing postulations and arguments, the influence of financial markets on economic growth is regarded as market-based or direct finance while the use of bank credit is regarded as indirect finance or bank-based system which requires intermediaries as shown in Figure 2.2. Funds flow from lenders or savers to borrowers or spenders through financial intermediaries as a form of indirect finance to support bank-based theoretical view. On the other hand, the flow of funds from lenders or savers to borrowers or spenders in the financial markets is a form of indirect finance to support the market-based theoretical view.

**Figure 2.2: Flow of Bank-based (indirect) and Market-based (direct) Finance in an Economy**



**Source: Mishkin and Eakins (2017)**

According to Scholtens and Wensveen (2003), bank-based view postulates that banking systems enhance economic growth to a greater extent especially at early stages of economic development. In this regard, bank-based view focuses on the positive role of banks in enhancing capital allocation and corporate governance through acquisition of information about firms and managers (Diamond, 1984 as cited in Mirzaeenejad and Geraeenejad 2016); enhances economic growth and efficiency of investment through managing cross-sectional and liquidity risk (Allen and Gale, 2000).

In addition to this, bank-based view highlights the weaknesses of market-based view (Levine, 2002). For instance, Stiglitz (1985) argues that well-developed markets tend to quickly reveal information to the public which discourages individual investors to obtain information. However, banks mitigate this problem through developing long-run relationship with firms and non-disclosure of information in public markets (Boot, Greenbaum and Thakor, 1993).

Additionally, Hoshi et al. (1990) argues that bank-based system could enhance better economic growth resulting from ability to encourage longer-term investment in the real sector, while short-term investment in market-based system proves highly sensitive to stock market prices. Hence, bank-based system can foster productive investment since the view is less affected by unsteady financial markets (Hoshi et al., 1990). Furthermore, Pollin (1995) argues that implementation of costly government policies is easier in the bank-based system as it provides governments with intervention measures in the financial sector than the market-based system.

However, Allen and Gale (1999) postulates that in new tentative situations which involve innovative products and processes, bank-based view may tend to be ineffective to gather and process information. Hence, this weakness in bank-based has prompted some support for a market-based system by arguing that financial markets augment greater customisation of risk-ameliorating tools through the provision of richer set of risk-management tools (Nyasha and Odhiambo, 2017a). In this regard, Levine (2004) and Prochniak and Wasiak (2017) asserts that as economies mature, the need for a more sophisticated and richer set of risk management tools for raising capital arises. Consequently, such economies may concurrently benefit from a regulatory and legal environment which supports the advancement of market-based activities to prevent a retarded overall economic growth (Levine, 2004).

In line with the ongoing, some studies provide evidence to support the existence positive relationship between bank-based view and economic growth. For instance: Odedokun (1996), Odedokun (1998), Levine, Loayza and Beck (2000), Vaithilingam, Guru and Shanmugam (2003), McCaig and Stengos (2005), Hao (2006), Lu and Shen (2012), Zhang, Wang and Wang (2012) Mamman and Hashim (2014), Korkmaz (2015), Grbic (2016), Adediran et al. (2017), Fu, Lin and Molyneux (2018). On the other hand, some other studies find evidence to argue the existence of negative relationship between bank-based system and economic growth. Examples of such

studies include: Ndako (2010), Mahran (2012), Liang and Reichert (2012), Ngouhouo and Moutie (2015), Modebe and Ezeaku (2016), Xu (2016), Iheanacho (2016), Uremadu, Nwokocha and Duru-Uremadu (2017), Alexiou, Vogiazas and Nellis (2018).

The market-based or direct finance on the other hand focuses on the role of well-functioning markets in fostering economic growth through enhancing corporate governance, capital allocation, information dissemination and facilitating risk management (Boyd and Smith, 1998; Allen and Gale, 1999). In this regard, proponents of market-based view argue that the intrinsic inefficiencies associated with banks will be reduced by markets in enhancing economic growth (Levine, 2002). The relevance of market-based system is supported by the research findings of Gupta and Gregoriou (2018) which reveals that market-based system provides reduced information asymmetry and better access to finance for SMEs listed on stock exchange markets than their unlisted counterparts. As such, this can mitigate listed SMEs from external funding constraints; which decreases probability of their failure.

In a similar vein to bank-based system, the empirical evidence on the relationship between market-based finance and economic growth has been inconclusive despite the significant role of financial markets on economic growth emphasises by some Economists (Nyasha and Odhiambo, 2017a). Progressively, some studies provide evidence to support the positive role of market-based system on economic growth. For instance, the study of Marques, Fuinhas and Marques (2013) reveal positive relationship between stock market development and economic growth in Portugal for the period 1993 to 2011. The study of Ngare, Nyamongo and Misati (2014) investigates the relationship between stock market development and economic growth among thirty-six (36) countries in Africa for the period 1980 to 2010. The study reveals a positive relationship between stock market development and economic growth among African countries under investigation. This study supports the findings of an earlier study of Akinlo and Akinlo (2009) which reveals positive impact of stock market development on economic growth in seven (7) Sub-Sahara African countries.

Al-Nasser (2015) examines the relationship between stock market development and economic growth for fourteen (14) Latin American countries for the period 1978 to 2011. The study finds evidence to support the existence of positive relationship between stock market development and economic growth. In Nigeria, the research outcome of Amu, Nwezeaku and Akujuobi (2015) provides further evidence to show



that capital market has significant positive impact on economic growth in Nigeria. The study of Fufa and Kim (2017) investigates a panel of sixty-four (64) homogenous countries. The study finds evidence to support positive and strong impact of stock markets on economic growth in European middle-income, high-income, upper and lower middle-income countries. The study also reveals marginal significance of stock markets on economic growth in non-European high-income countries. By the same token, Pradhan (2018) finds positive relationship between stock market development and economic growth among G-20 countries for the period 1980 to 2015.

Other studies which support the positive relationship between stock market development and economic growth include: Lazarov, Miteva-Kacarski and Nikoloski (2016), Kajurova and Rozmahel (2016), Azam et al. (2016), Deyshappriya (2016). On the other hand, the outcomes of some studies show a negative relationship between market-based system and economic growth. For instance, the study of Fufa and Kim (2017) provides further evidence to show a negative relationship between stock markets and economic growth in non-European high-income countries. Also, the research of Pan and Mishra (2018) reveals a negative relationship between stock market development and economic growth in Chinese economy for the period 2007 to 2012.

The distinction between these two financial systems on economic growth in different countries has been examined in the seminal work of Levine (2002). According to Levine (2002), the backdrop of existing studies motivated the seminal study. This backdrop is that empirical research on comparative advantage of bank-based and market-based financial systems focuses on the U.K and the U.S as market-based systems, Japan and Germany as bank-based systems. Hence, drawing a broad conclusion about the long-run effects of both financial systems using the aforementioned four countries will be difficult despite significant portion of world output dominated by these countries. The study reveals no evidence for bank-based or market-based views which implies that differentiating countries by financial structure does not explain long-run cross-country differences in economic performance.

In another dimension, the study of Moradi, Mirzaeenejad and Geraeenejad (2016) examines the effects of bank-based and market-based financial systems on income distribution among fifteen (15) developing and developed countries using OLS panel data. The study reveals that bank-based financial system reduces inequality of



income in developing countries, while market-based financial system provides better income distribution in developed countries.

#### **2.3.4 The Financial Services View**

The positive significance of financial sector development in enhancing economic growth has generated increasing consensus among scholars since the seminal work of McKinnon (1973) and Shaw (1973). In recent years, the positive relationship between the two variables has been supported by some renowned studies such as King and Levine (1993), Demirguc-Kunt and Maksimovic (1996), Levine and Zervos (1998), Beck, Levine and Loayza (1999). As such, the starting point of the financial services view acknowledges that bank-based financial systems perform differently from market-based systems (Song and Thakor, 2010) which have been identified by different existing literatures over the years. For instance, Allen and Gale (1999) asserts that bank-based systems provide better intertemporal sharing of risks while market-based systems provide better cross-sectional sharing of risk.

Additionally, market-based systems are better to prevent commitment into financing unprofitable projects (Dewatripont and Maskin, 1995) and the feedback effect of prices in the market may also provide managers with required important information (Boot and Thakor, 1997a; Subrahmanyam and Titman, 1999). The provision of bilateral financing in bank-based systems provides better protection of borrower's proprietary information and R&D incentives than multilateral financing provided by market-based systems (Bhattacharya and Chiesa, 1995; Yosha, 1995). Market-based systems provide stronger incentives for financial innovation (Boot and Thakor, 1997b) and also provide better funding options for projects based on range of opinion (Allen and Gale, 1999) while bank-based systems help in resolving moral hazard and asset-substitution more effectively (Boot and Thakor, 1997a).

The existence of financial services view serves as a medium to resolve the conflicting stands of bank-based and market-based views. In this regard, financial arrangements through intermediaries, markets and contracts occur in order to provide financial services and improve imperfections in the market (Merton and Bodie, 1995; Levine, 1997; Lee, 2012). According to Levine (1997), financial systems perform five main functions which are essential to the economy: efficient allocation of resources, facilitation of risk management, mobilisation of savings, monitoring activities and control of managers through corporate governance, and foster exchange of goods and services.

Additionally, Levine (2002) and Scholtens and Wensveen (2003) highlight that financial services view emphasises on the role of banks and financial markets in creating risk management instruments, researching firms, exerting corporate control and mobilisation of the society's savings for productive use. Progressively, the main issue in this view is not banks or markets but the creation of a suitable environment for banks and financial markets to provide sound financial services (Levine, 2002). Therefore, the view conforms to both bank-based and market-based view (Levine, 2002) as it regards both views as complements rather than substitutes in enhancing the quality financial services provided by the financial system (Boyd and Smith, 1998; Huybens and Smith, 1999; Scholtens and Wensveen, 2003; Lee, 2012).

However, the relationship between the two debatable views varies at different levels of economic growth in different countries. Hence, as economies grow at early stages with the help of services provided by banks, the services provided by financial markets also become more essential as countries become more market-based (Boot and Thakor, 1997a; Boyd and Smith, 1998; Song and Thakor, 2010). This is the current case of China which is the fastest growing and largest developing and emerging economy in the world (Pan and Mishra, 2018) as it transits to market-based system from shadow banking (Gabor, 2018). More so, the studies of Singh and Weisse (1998) and Ngare, Nyamongo and Misati (2014) show that stock markets in developing economies when provided with sophisticated monitoring systems have the tendency to enhance long-term growth as they promote short-term profits. Similarly, banks maintain long-term relationships with investors and help to provide constant financing for industrialization and sustaining long-term economic growth.

In line with the ongoing, the study of Song and Thakor (2010) recently identifies three-dimensional interaction between bank-based and market-based view to support the financial services view: competition, complementary and co-evolution. As such, Song and Thakor (2010) argue that banks and markets are regarded to compete when viewed in isolation. However, banks and markets complement and co-evolve when viewed from an interactive position. In the model of Song and Thakor (2010), the choice of suitable financing source by borrowers is considered from direct financing from capital market (for borrowers with high creditworthiness), securitisation which allows banks to check their creditworthiness before obtaining capital market financing (for borrowers with intermediate creditworthiness), and relationship loan from the bank (for borrowers with low creditworthiness).

Progressively, the ability of borrowers to obtain financing is hindered by certification and financing (Song and Thakor, 2010). On the one hand, certification is a friction which occurs on the basis that borrowers are heterogeneous with different degree of creditworthiness which is linked to the five Cs of credit. Hence, when certification friction occurs in severity, then the possibility of credit denial increases. On the other hand, financing friction arises from disseminated costs of external finance where finance seekers and providers tend to value project surplus differently causing higher financing cost. To provide a better illustration of complementary and co-evolution of banks and markets, Song and Thakor (2010) presents two interaction vehicles creating flow of benefit between both views: securitization and bank capital.

In the first interaction vehicle which builds on the study of Allen and Gale (2000), bank certifies and the market finances (Song and Thakor, 2010). As such, securitization removes certification and financing friction which causes denial or hampers access to finance for borrowers resulting from wrong market judgements (financing friction) or bank judgements (certification friction). Hence, securitization acts as a means by which certification technological improvement can reduce certification friction and financing friction when transmitted to the financial market (Song and Thakor, 2010). Thus, banks and markets complement each other and not in competition as certification and financing frictions serve as complements in impeding access to efficient funding by borrowers (Song and Thakor, 2010).

On bank capital interaction vehicle which builds on the study of Holmstrom and Tirole (1997), bank financing frictions are reduced through the market. In this regard, firms with adequate capital have direct access to the market while those with inadequate capital can borrow from banks and the market. As such, banks can raise additional capital required to meet higher capital requirements related with riskier loans as development in the capital market reduces financing friction of banks and lowers cost of equity. Therefore, through bank capital, reduction in financing friction by capital markets eventually gets transmitted to banks. This allows banks proffer more effective resolution to certification friction for some borrowers and expands lending scope of banks (Song and Thakor, 2010).

Drawing from the financial services view recently revisited by Song and Thakor (2010), there has been scholarly attention towards investigating existence of financial services view in different countries. For instance, the study of Beck (2010) which investigates the existence of either bank-based and market-based system using

cross-country analysis of forty (40) developed and developing countries fails to find evidence to support either view. As such, Beck (2010) concludes that the research findings support the financial services view which stresses on complementary interaction between banks and markets rather than dominance. This outcome conforms to the earlier study of Levine (2002). The work of Karima (2011) investigates the relationship between financial development and economic growth for both developing and developed countries using Generalised Method of Moments dynamic estimation. The study reveals that bank-based system exhibits a negative impact on economic growth while market-based shows a positive impact.

The study of Lee (2012) investigates bank-based and market-based financial systems in the U.S, the U.K, Germany, France, Japan and Korea for different periods. The study finds evidence to support existence of financial services view in all the countries except the U.S where the two sectors appear mildly substitutable. More so, the study further reveals that the stock market played an important role in enhancing economic growth in the U.S, the U.K and Japan while the banking sector played an essential role in facilitating economic growth in Germany, France and Korea. Marques, Fuinhas and Marques (2013) examines the financial services view in Portugal for the period 1993 to 2011 using Vector Autoregressive modelling. The study finds evidence to support the comparative advantage of market-based system over bank-based system in Portugal as the former shows bi-directional causality to economic growth while the latter shows no causality to economic growth.

The study of Osoro and Osano (2014) examines the interaction of banks and markets in Kenyan financial system. The study finds evidence to support financial services view by revealing complementary and co-evolving relationship between banks and capital markets in Kenyan financial system. In a similar vein, the study of Sahoo (2014) using Autoregressive Distributed Lag model bounds test technique for the period 1982 to 2012. The study finds evidence to support the existence of financial services view in India by revealing that economic growth in India is driven by both market-based and bank-based view. Odhiambo (2014) investigates the relationship between banks, stock markets and economic growth in South Africa. The study reveals that the relationship between market-based and bank-based systems is complementarily rather than competitive. However, the level of complement between the two views appears weak.

Al-Nasser (2015) examines financial services view in fourteen (14) Latin American countries for the period 1978 to 2011 using panel analysis. The outcome of the study supports the existence of financial services view among the countries under investigation as bank-based system shows uni-directional causality to economic growth while market-based system shows a bi-directional causality. The study of Matadeen and Seetanah (2015) examines the relationship between stock market, banking development and economic growth in Mauritius for the period 1988 to 2011. As such, the study provides further evidence to support the existence of complementary role between stock market development and banking development in Mauritius.

In Nigeria, Arize, Kalu and Nkwor (2017) investigates the relationship between bank-based and market-based view in the Nigerian financial system using Autoregressive Distributed Lag model bounds test technique. The study reveals a complementary and co-evolving relationship rather than competing association between the two debatable views. This is in line with earlier studies of Ujunwa and Salami (2010) and Adefeso, Egbetunde and Alley (2013) which also find evidence of financial services view in Nigeria. Using the same technique as in the study of Arize, Kalu and Nkwor (2017), further investigation of the financial services view emerge in the earlier study of Nyasha and Odhiambo (2016) and later study of Nyasha and Odhiambo (2017a). These aforementioned studies examine the impact of both bank-based and market-based on economic growth in Australia and Brazil respectively for the period 1980 to 2012.

The findings of the former study does not support the financial services view rather the evidence supports the existence of bank-based view at the detriment of market-based view in Australia. On the other hand, the findings of the latter study also conflict with the financial services view as it reveals that Brazilian economy is driven by market-based view rather than bank-based view. Thus, based on the research findings of Nyasha and Odhiambo (2016) and Nyasha and Odhiambo (2017a), it is arguable that there is competing position between bank-based and market-based view in Australia and Brazil.

The study of Moradi, Mirzaeenejad and Geraeenejad (2016) took a different dimension by focusing on income distribution for fifteen (15) developing and developed countries. The study reveals that market-based financial system enhances better income distribution in developed countries while bank-based financial systems

reduces inequality of income in developing countries. This outcome supports earlier study of Demirguc-Kunt and Levine (1999). Furthermore, Nyasha and Odhiambo (2017b) examines whether bank-based and market-based views are complements or substitutes in enhancing economic growth in Kenya, Brazil and the USA for the period 1980 to 2012 using Autoregressive Distributed Lag model bounds test technique. The study reveals evidence of financial services view in Brazil and the USA as bank-based and market-based views complement each other. On the other hand, no evidence of financial services view exists in Kenya as bank-based and market-based views appear to be substitutes rather than complements. As such, the outcome of this study for Brazil contradicts the empirical evidence of Nyasha and Odhiambo (2017a).

Fufa and Kim (2017) investigates the relationship between stock markets, banks and economic growth using the dynamic panel generalised method of moment among sixty-four (64) different income classes of European and non-European countries. The empirical results of this study are consistent with the financial services view. However, in sharp contrast to other existing empirical findings, the study of Fufa and Kim (2017) further reveals that the impact of both bank-based and market-based systems on economic growth depends on the level of economic growth across various income groups of economies under investigation.

Based on these aforementioned studies and other several existing studies on financial services view, it is arguable that the relationship between bank-based and market-based nexus towards in the economy is still generating unresolved arguments among studies. Hence, the question whether market-based and bank-based financial systems are substitutes or complements remains debatable. As such, this can be attributable to weaknesses in existing studies as highlighted by Seven and Yetkiner (2016) focusing on selection of appropriate proxies as variables in empirical analysis. Arguably, this is also attributable to investigation of different time periods in different countries by different studies.

Following the ongoing debate, there have been four different views existing in the literature of finance-growth nexus. These four views express the causal relationship between financial development and economic growth with theoretical and policy implications (Al-Nasser, 2015). Remarkably, the existing four views emanated from notable pioneering studies of Bagehot (1873), Schumpeter (1911), Patrick (1966), Robinson (1952), Goldsmith (1969), McKinnon (1973), Shaw (1973) and Lucas (1988).

#### **2.3.4.1 Finance-led Growth View or Supply-leading Hypothesis**

The first view is the finance-led growth or 'supply-leading hypothesis' which posits a causal relationship from financial development to economic growth (Prochniak and Wasiak, 2017) emphasising that improvement of a robust financial sector can induce economic growth (Alexiou, Vogiazas and Nellis, 2018). According to Patrick (1966), the supply-leading phenomenon is the creation of financial institutions and making their financial assets, liabilities and other associated financial services available in advance of demand. Patrick (1966) further highlights that the supply-leading paradigm has two major functions: transfer of resources to modern sectors from traditional or non-growth sectors, and to enhance response of entrepreneurs in modern sectors. Thus, it can be deduced that the supply-leading hypothesis instigates credit creation through the financial intermediation process. However, Patrick (1966) pinpoints that in the process of inducing economic growth through finance, the utilisation of resources (managerial skills and entrepreneurial talents) and other associated costs must be beneficial by stimulating growth sufficiently.

According to Nyasha and Odhiambo (2018), the supply-leading or finance-led growth hypothesis places high significance on the role of financial sector development on economic growth. This hypothesis is supported by studies such as: Marashdeh and Al-Malkawi (2014) which investigates finance and economic growth in Saudi Arabia using data from 1970 to 2010. The study finds evidence to support existence of supply-leading hypothesis in Saudi Arabia. Also, the research of Kumar (2014) reveals that supply-leading hypothesis holds in the Indian economy. In the UK, the study of Fethi and Katircioglu (2015) supports the supply-leading hypothesis among finance and growth. The study of Deyshappriya (2016) reveals that finance-led growth hypothesis is valid among emerging markets using data for the period 1990 to 2014.

#### **2.3.4.2 Growth-led Finance View or Demand-following Hypothesis**

The second view is growth-led finance or 'demand-following hypothesis' which focuses on the demand side for financial services within an economy and proposes a causal relationship from economic growth to financial development (Prochniak and Wasiak, 2017; Alexiou, Vogiazas and Nellis, 2018). This causal pattern explains that as an economy grows through its sectors, additional and modern demands for financial services are requested which creates growth of the financial system (Patrick, 1966). Following this postulation, Patrick (1966) argues that the lack of financial institutions in underdeveloped countries indicates lack of demand for financial services.



However, due to rapid globalization especially in the 21<sup>st</sup> century, it is clearly arguable that the demand for financial services has increased which has also created the need for financial institutions in different economies. Financial institutions stand at the centre of a global economy in order to enhance availability and transfer of funds for transactional purposes (Mishkin and Eakins, 2017). In line with the reasoning of Patrick (1966), the view of Goldsmith (1969), Gurley and Shaw (1967) and Jung (1986) hypothesises that growth leads finance is mainly related to developing countries due to increasing demand for financial services.

In this regard, the demand-following paradigm emphasises that expansion of the financial system is spurred by real economic growth (Alexiou, Vogiazas and Nellis, 2018) which makes finance passive in the economic growth process (Patrick, 1966; Calderon and Liu, 2003). The 'growth-led hypothesis' is supported by studies such as: Hassan, Sanchez and Yu (2011) finds a unidirectional causality from growth to finance in Sub-Saharan Africa and East Asia and Pacific region in the short run. The study of Ndlovu (2013) finds evidence to support a unidirectional causality from economic growth to financial development in Zimbabwe for the period 1980 to 2006. Pan and Mishra (2018) shows economic growth has helped to stimulate development of Shenzhen B market. Additionally, the study of Nasir, Majeed and Aleem (2018) reveals that economic growth causes financial development in Korea as an emerging Asian market. Furthermore, the study of Bist (2018) which investigates financial development and economic growth among a panel of sixteen (16) African and non-African low-income countries reveals a unidirectional causality from economic growth to financial development in the short run.

As such, the supply-leading hypothesis of Patrick (1966) provides a further argument for the importance of finance on economic growth to buttress the postulation of Bagehot (1873) and Schumpeter (1911) as protagonists of finance-led growth view. These earlier studies provide a foundation for the studies of Goldsmith (1969), McKinnon (1973) and Shaw (1973). On the contrary, the supply-leading paradigm of Patrick (1966) builds on the study of Robinson (1952) as antagonists of the finance-led growth view to argue the importance of expanding economy in developing the financial sector indicating a growth-led finance postulation.



#### 2.3.4.3 Feedback Hypothesis

The third view in the literature of finance-growth nexus is the 'feedback hypothesis' which stresses on the existence of bidirectional causal relationship between financial development and economic growth. According to this view, financial sector development and economic exhibit positive interdependent, and the relationship between the two variables could enhance feedback causality (Al-Nasser, 2015). Patrick (1966) postulates that an interaction between demand-following and supply-leading phenomena is feasible in actual practice regarded as stage of development hypothesis. For instance, before the upsurge of a sustained growth, supply-leading paradigm may be able to trigger real investment within an economy. Thus, innovation and development of modern financial services create new opportunities for savers and investors leading to self-sustained economic growth (Calderon and Liu, 2003). However, the supply-leading impetus tends to gradually become less imperative with the dominance of financial response through the demand-following paradigm.

Following the interrelationship between the two paradigms as explained by Patrick (1966) using the stage of development hypothesis, it is arguable that utmost efficiency of financial intermediation on economic growth should be determined by the dual effect of supply-leading and demand-following phenomena in any economy. The 'feedback hypothesis' is supported by the outcome of existing studies such as: The famous study of Calderon and Liu (2003) in the causality nexus between financial development and growth shows a bidirectional causality between the two macroeconomic variables among developing and industrial economies. The study further reveals financial intermediaries have larger impact on developing economies than industrial economies.

A bidirectional causality between finance and growth is also evident among several low and middle-income countries in the study of Hassan, Sanchez and Yu (2011). Similarly, in Nigeria, the study of Adeyeye et al. (2015) finds bidirectional causality between financial sector development and economic growth for the period 1981 to 2013 which is in line with the studies of Ndako (2010) and Ogbonna et al. (2013). The study of Deyshappriya (2016) further shows evidence to support bidirectional causality among developed economies for the period 1990 to 2014. Kyophilavong, Uddin and Shahbaz (2016) also supports the feedback hypothesis finance-growth nexus in Laos. In Lebanon, the study of Abosedra and Sita (2018) reveals bidirectional causality among finance and growth. The study of Oyebowale and Karley

(2018) also finds evidence to support feedback hypothesis on finance-growth nexus in Nigeria.

#### **2.3.4.4 Neutrality Hypothesis**

Contrary to the three views as previously discussed, the fourth view is the 'neutrality hypothesis' proposed by Lucas (1988). According to this view, the role of financial development on economic growth is overstated, and that there is no existence of causal relationship between the two variables (Nyasha and Odhiambo, 2014; Al-Nasser, 2015; Nyasha and Odhiambo, 2018). The 'neutrality hypothesis' is supported by studies such as: Akbas (2015) investigates causality relationship among selected emerging countries for the period 1988 to 2013. The result aligns with neutrality hypothesis for selected countries except for Turkey. Furthermore, the study of Pradhan (2018) supports the 'neutrality hypothesis' as it reveals that there is no causality between stock market development and economic growth among G-20 countries for the period 1980 to 2015.

#### **2.3.5 Law and Finance or Legal-based View**

The legal-based view of financial structure was pioneered in the study of La Porta et al. (1998) which created a foundation for later studies in La Porta et al. (1999) and La Porta et al. (2000). The study of La Porta et al. (1998) investigates the origin and enforcement quality of legal rules governing protection of creditors and corporate shareholders in forty-nine (49) countries. The study reveals that, countries with common-law generally have the strongest legal protection of investors, while French-civil-law countries show the weakest protection and German and Scandinavian-civil-law countries position in the middle.

The legal-based view of La Porta et al. (1998) is an extension of the financial services view and explicitly argues that the co-evolution of bank versus market-based systems does not particularly provide suitable manner in differentiating financial systems (La Porta et al. 1999, 2000). Rather, the study emphasises on the function of the legal system in generating a growth-promoting financial system (Scholtens and Wensveen, 2003). As an extension to studies of La Porta et al. (1998; 1999; 2000), studies such as Fohlin (2000), Kroszner and Strahan (2000) and Rajan and Zingales (2000) introduce political factors as elements of legal-based view to explain the relationship between finance and economic development.

In this regard, the legal-based view argues that finance is a series of contracts which are made more or less effective through legal rights and mechanisms of enforcing such legal rights (La Porta et al., 2000). The foregoing discussion implies that the existence of a well-functioning legal system promotes the operational activities of markets and banks. In addition to this, the aggregate degree and quality of financial services available in an economy is determined by the existing legal system which further helps to enhance economic growth through efficient allocation of resources (Levine, 2002; Lee, 2012).

To proceed, there has been relatively little research into examining legal-based view in comparison to bank-based, market-based and financial services views. For instance, the study of Augustine and Otaru (2011) examines the impact of legal-based financial structure on long-run economic growth in Nigeria for the period 1992 to 2008 using generalised method of movement. In relation to the argument of La Porta et al. (1998) which supports legal-based view, the study of Augustine and Otaru (2011) reveals rebuttal evidence that elements of legal-based financial structure in Nigeria are negative and non-significant in enhancing economic growth in the country. Consequently, the study recommends restructuring of legal system in Nigeria to enforce contracts.

Also, the study of Grassa and Gazdar (2014) finds evidence to support legal-based view by investigating panel regression analysis for thirty (30) countries over the period 2005 to 2010 to examine the legal-based view on Islamic finance. As such, the findings of this study reveals that, countries adopting Sharia legal system possess a well-developed Islamic financial system. Additionally, the study further reveals that, countries adopting mixed legal system of Common Law and Sharia enjoy flexibility to adjust their legal system to changing socioeconomic situations which helps in development of Islamic financial system.

However, countries adopting mixed system of Civil Law and Sharia Law have less flexibility in amending their laws which thwarted development of Islamic finance. The study of El-Chaarani (2014) considers different systems of legal protection and investigates the impact of capital structure on performance of 5050 listed firms in eight different European countries. The study reveals that owners in low degree of legal protection have higher likelihood of using capital structure of firms to serve their proper welfare. In high level of legal protection on the other hand, debts and the market-based system are utilised to restrain expropriation of private benefits.

By the same token to the pioneering study of La Porta et al. (1998), the work of Koch, Nilsson and Collin (2015) investigates the relationship between strength of legal system in terms of investor protection on the performance of financial analysts among four (4) European countries. The study reveals evidence to support the proposition that there is existence of relationship between performance of financial analysts and strength of legal protection among the countries under investigation. Hence, the performance of financial analysts is better with higher level of investor protection.

Following the four theoretical views on financial systems as discussed, the bank-based view supports the role of banks as financial intermediaries in the channelling of funds from lenders to borrowers; the market-based view supports the role of financial markets as a source of raising finance between lenders and borrowers; the financial services view which resolves the conflict between bank-based and market-based views; and legal-based view which emphasises on the role of legal systems in generating a growth-promoting financial system.

#### **2.4 The Five Cs of Good Credit**

The five Cs of credit serves as an analytical tool or system used by lenders to measure the creditworthiness of prospective borrowers (Strischek, 2009). According to Golden and Walker (2012) the five Cs of credit represent the integral part of sound commercial banking regarded as tried-and-true rules of good loan making or the “Thou Shalt” commandments of lending. As such, the five Cs is a tool which weighs five features of a potential borrower and conditions of the loan with the aim of estimating the chance of default (Strischek, 2009).

In line with this, Adedeji et al. (2018) highlights that the five Cs are elements of credit management which is the total process involved in lending, commencing from measuring the creditworthiness of potential borrowers to recovering both the principal and interest. Furthermore, Adedeji et al. (2018) stresses that the implication of credit management has significant impact at micro and macro level in relation to credit risk. This assertion is on the basis that poor allocation of credit increases costs to borrowers, and distort normal inflow and outflow of funds required by banks to maintain lending capacity. The five Cs of credit include: character, capacity, capital, collateral and conditions. These are discussed hereafter.

### 2.4.1 Character

Character ensures that a prospective borrower in form of a person or company is of upstanding character and it gives borrowers a sense of assurance about how borrowers will respond to real emergency situations (Golden and Walker, 2012). Character is also regarded as credit history and refers to the track record or reputation of borrowers in managing credit and making payments over time (credit report). Credit history is an essential element of a credit report which could be in form of a credit score- a numeric value based on the information in a credit report of a prospective borrower. Hence, the higher the credit score, the lower the credit risk.

Credit scores are generated by credit reference agencies which are commercial organisations saddled with the responsibility of compiling information from several sources, including financial institutions (banks and building societies), mobile phone companies, electoral roll and county court judgements. Credit reference agencies do not influence lending decisions. However, they enable lenders to make lending decisions by providing lenders with the required information to judge the creditworthiness of prospective borrowers. In the UK, the three main credit reference agencies are Experian, Callcredit and Equifax.

The view of Strischek (2009) argues that despite the improved quantitative skills in assessing creditworthiness of potential borrowers, the assessment of character in an increasingly impersonal society is becoming more challenging. The argument of Strischek (2009) is applicable to countries like Nigeria where there is no existing sophisticated measure to assess creditworthiness of prospective individual borrowers in form of a credit report. As such, character is assessed by lenders using subjective judgement and could require a guarantor attesting to the creditworthiness of the potential borrower. This is attributed to the fact that Nigeria unlike the UK is not structured to provide track credit record of individuals by credit rating agencies.

However, credit rating for Nigeria generated by agencies such as Moody's, Fitch and S&P are used by pension funds, sovereign wealth funds and other investors to measure creditworthiness of Nigeria (Trading Economics, 2018). In such a case of impersonal societies like the Nigerian economy, Strischek (2009) stresses that there is need to readjust the weigh attached to each five Cs in order to provide more concentration on character and get to know customers better. Hence, the existing wide gap between ability of borrowers to repay and willingness to repay should be narrowed by improving assessments of character.

### 2.4.2 Capacity

Capacity as one of the five Cs is the ability of a prospective borrower to operate a business successfully and generate the required cash to repay obligations as they arise (Strischek, 2009). In other words, capacity measures the ability of borrowers to repay a loan if issued by the lender. A good indicator of capacity is debt-to-income ratio which compares cash flow generated from the business against recurring debt (Golden and Walker, 2012). In order to meet the requirement of capacity, a business should have been generating positive cash flow over the years and be able to demonstrate consistency of such or better performance in the future. Thus, embedded in capacity are factors such as skills, experience and training required to ensure the success of a business (Strischek, 2009). In line with the ongoing, it can be deduced that capacity as a measure of creditworthiness for prospective borrowers should be assessed in a similar manner in different countries unlike character which could prove difficult in an impersonal society.

Be that as it may, it is arguable that the ability of a business to continuously generate a positive and suitable cash flow could be affected by volatility in economic situations. For instance, the Nigerian economy slipped into recession in the first quarter of 2016 as the economy shrank by 0.52 percent (Nwankwo, 2017; Kazeem, 2017). The recession in Nigeria was caused by fall in the foreign reserves following drop in price of oil which is Nigeria's major export (Kazeem, 2017) and lasted for five consecutive quarters before slow recovery in second quarter of 2017. Outside the oil industry, the effect of the recession was reflected on the Nigerian currency, the naira which experienced devaluation in response to contraction of the economy.

Consequently, there was constant increase in prices of goods (Odili, 2017) which is still an ongoing issue and aggregate demand dropped. Concurrently, it is arguable that the recession would tend to have an adverse effect on the cash flow of businesses for that period until full economic recovery which is an evidence of the balance-sheet channel of monetary transmission. Thus, using capacity as a measure of creditworthiness for a prospective borrower during such period might be detrimental to loan approval.

### 2.4.3 Capital

According to Strischek (2009), capital as a measure of creditworthiness answers the question: “does the capable character hold adequate funds to prime the pumps?”. As such, entrepreneurs or business owners must be able to invest some money at the commencement of the business in order to cover its start-up costs, provide working capital and acquire earning assets. This will help to ensure survival in competitive business environment (Strischek, 2009; Golden and Walker, 2012). In a nutshell, capital is a way of financing business activities. As such, firms depend on several sources of finance to enhance performance (Terungwa, 2012) which is influenced by available options and preferences of entrepreneurs (Eniola and Entebang, 2015). Hence, it is essential that enterprises have access to finance which is the extent at which financial resources and services are available to businesses at reasonable cost of capital (Ganbold, 2008; Aminu and Shariff, 2015). In line with this, Eniola and Entebang (2015) highlights that, sources of finance available to firms are classified as internal or external, formal or informal, debt or equity, short/medium or long-term financing.

Internal financing is regarded as the first and essential choice for enterprise to raise capital and it forms a vital part of business development and survival. This mainly involves the use of retained profits and depreciation to run the business (Eniola and Entebang, 2015). On the other hand, external financing involves obtaining capital from external sources such as individual investors, financial institutions, venture capital and crowd funding (Terungwa, 2012; Eniola and Entebang, 2015). According to Fischer and Reuber (2003), internal financing is essential for development and survival while external financing is vital for rapid growth.

Formal sources of finance are provided by financial institutions with the purpose of making profit such as commercial banks, development banks and merchant banks. To perform this special role, banks convert deposits to credit and issue loan to entrepreneurs and business owners for productive use (Eniola and Entebang, 2015). According to Terungwa (2012), the availability of bank credit as a formal source of capital is essential for start-ups especially smaller firms to mobilise other factors of production. On the other hand, informal sources are obtained from family, relatives, friends, trade credit and directors.



Debt financing could be formal or informal which occurs when capital is provided in form of loans by investors to managers or owners of a business in return of interest payment (Eferakeya, 2014). The use of debt financing as a form of capital from lending institutions such as banks is particularly related to smaller firms which requires external finance. As such, information asymmetry and moral hazards possess significant impact on the role of banks and other providers of finance due to lack of collateral and market presence for high-tech start-ups (Eniola and Entebang, 2015). On the other hand, equity financing is a form of capital received by business owners in return for a comparative fraction of the firm's value. The views of Aminu and Shariff (2015), and Eniola and Entebang (2015) affirm that the equity value of a firm is whatever remains after fulfilling claims of its creditors or residual claim.

Equity capital can be internal or external- internal equity finance is generated within the business through retained profits or earnings while external equity finance can be obtained from third parties by organisations listed on a recognised stock exchange market through the sale of shares. The investors in such organisations known as shareholders receive dividends in return for the money invested and regarded as owners of the business. In this scenario, there is existence of information asymmetry among the owners and directors or managers of the organisations. Hence, shareholders are eligible to receive a copy of the organisation's annual report as a means of communication between the directors or managers and shareholders. Also, shareholders are eligible to attend annual general meetings and vote for electing directors or other issues which may affect the company such as liquidation or mergers.

Short-term financing is a medium of raising capital in form of loan or credit facility with a maturity period of one year or less. This form of capital is often utilised by smaller firms at a high cost to aid business activities and operation due to the challenges involved in raising sufficient finance for expansion (Bates and Hally, 1982 as cited in Eniola and Entebang, 2015). On the other hand, long-term financing is a form of capital with a maturity period of more than one year and generally used to finance projects and assets (Eniola and Entebang, 2015).

Be that as it may, the financing situation of providing capital for organisations especially SMEs in Nigeria has been a topic of debate over the years. According to Claessens (2006), the problem of accessing capital facing SMEs is related to the availability of financial services. Hence, the phenomenon of financing difficulty



experienced by SMEs is applicable to several countries in the world including developed countries with fairly sound financial system. However, this issue is mainly prominent in Nigeria (Eniola and Entebang, 2015) and has been a continuous problem.

According to Ekpenyong and Nyong (1992), government policies in Nigeria are tailored to support the formal sector to the disadvantage of informal sector. Additionally, such asymmetry makes SMEs in Nigeria disposed of funds available to the informal sector. Thus, the improvement of SMEs in Nigeria based on accessibility to capital is weak despite the existence of a greatly capitalised and dynamic financial framework (Eniola and Entebang, 2015). Furthermore, Eniola and Entebang (2015) pinpoints that commercial banks in Nigeria have changed lending improvement process to favour large businesses in preparation for monetary hazards.

The problems of SMEs in Nigeria particularly regarding accessibility of capital has been revealed by several existing studies. For instance, the study of Ogbo and Nwachukwu (2012) examines the contribution of SME development on economic development in Nigeria using a random selection of one hundred (100) SMEs across Nigeria. Primary data was collected using administration of questionnaires and statistical analysis method was adopted. The study reveals that SMEs in Nigeria have performed below expectation due to factors such as attitudes and habits of SMEs, environmental factors, and frequent government policy changes.

In addition to this, the study of Eferakeya (2014) examines the impact of bank consolidation on access to credit of SMEs in Nigeria for the period 1999 to 2012 using secondary data obtained from CBN statistical bulletin. The statistical analysis reveals that there is no significant difference between financing of SMEs in pre and post consolidation era in Nigeria. Consequently, bank consolidation in Nigeria has reduced the financing of SMEs by an average of 0.3 per cent. Furthermore, the studies of Obamuyi (2010), Terungwa (2012), Aminu and Shariff (2015), and Adedeji et al. (2018) have provided further evidence to support the ongoing debate of lending constraints as a form of capital to SMEs in Nigeria. As such, this study further argues that the inaccessibility of SMEs to capital in Nigeria contributes to increasing poverty level and hindered economic growth.

#### 2.4.4 Collateral

Collateral is often regarded as security, and it is the property pledged by a borrower in a credit agreement to protect the interest of the lender. As such, collateral serves as a final source of repayment and represents last protection in the event of loan loss or default by the borrower (Golden and Walker, 2012). The view of Strischek (2009) accentuates that the most desirable type of collateral are assets which are likely to retain their worth in deteriorating business situations. Thus, such assets can be used by borrowers to offset weaknesses in firms' capacity or capital. In line with this, it is arguable that a firm with sufficient character and capacity with access to capital but with insufficient or low-quality collateral may find it difficult to obtain credit.

According to Eniola and Entebang (2015), lack of collateral has triggered information asymmetries and moral hazards on the impact of banks and other finance providers to issue credit especially to start-ups. The value of collateral is essential by banks to assess the creditworthiness of a prospective borrower and it is often negotiable based on the existing relationship between the firm and the bank. As firms in Nigeria rely on external finance for business activities and finance long-term investments, especially SMEs, credit must be fully collateralized (Idowu, 2012) by providing valuable assets.

In line with this, the difficulties of SMEs in Nigeria and around the world in accessing finance is regarded as demand side characteristics which occur when entrepreneurs fail to utilise existing financing opportunities, insufficient valuable projects or persuasive business ideas or lack of collateral (OECD, 2004). In a similar vein, the study of Obamuyi (2010) examines reasons banks constrain lending to SMEs in Nigeria and the study reveals these factors: poor creditworthiness, lack of collateral, poor project-package, inadequate record, high risk and loan diversion.

#### 2.4.5 Conditions

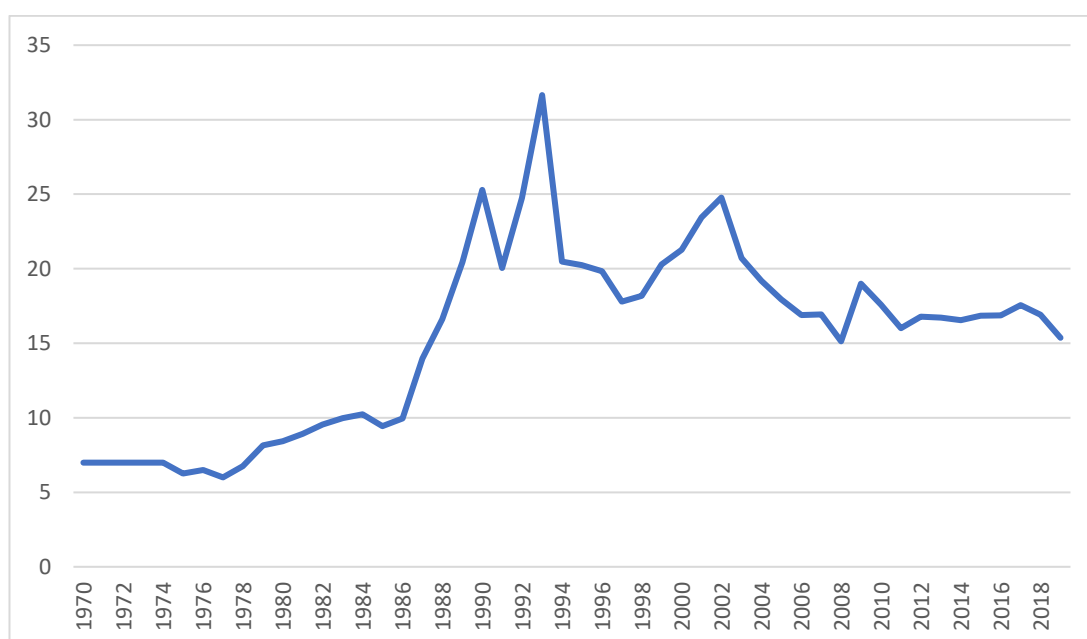
In a credit arrangement, conditions refer to economic and environmental influences which impact on the condition and performance of firms. Hence, conditions are factors which are beyond the immediate and direct control of borrower and must be considered in any credit decision (Strischek, 2009). According to Eniola and Entebang (2015), the difficulties in accessing capital by firms resulting from issues in bank lending practices is regarded as supply side characteristics in comparison to demand side characteristics which focuses on inadequacy of entrepreneurs or firms. As such, the supply side characteristics hindrance of capital is conspicuous when the terms

and conditions of credit tend to be unsuitable for firms and the pertinent sources of capital are not accessible (Eniola and Entebang, 2015).

This study earlier argues under ‘capacity’ as a measure of creditworthiness that, economic conditions like recession which was recently experienced in Nigeria will tend to have a negative impact on the supply of credit to firms. In a similar vein, entrepreneurs or business owners pay a cost of capital for credit obtained from external finance which is determined by interest rate. Hence, interest rate remains a dominant condition which borrowers consider in a credit arrangement. As such, it is further arguable that a credit arrangement with a condition of high cost of capital will prove unattractive to prospective borrowers.

Over the years, the Nigerian economy has been dominated with a high cost of capital associated with constant high lending interest rate, with an average of 15.3 percent from 1970 to 2019 (based on availability of data). According to World Bank (2019), the lowest lending interest rate in Nigeria during 1970 to 2019 was recorded as 6 percent in 1977, and highest lending rate of 31.65 in 1993 as shown in Figure 2.3.

**Figure 2.3: Lending Interest Rate in Nigeria from 1970 to 2019 (%)**



**Source: Author's Compilation from World Bank (2019)**

In comparison to the UK, the interest rate has been relatively low since the inception of the 2007/2008 financial crisis. The Bank of England (BoE) and its Monetary Policy Committee (MPC) dropped the interest rate to 0.5 percent in March 2009 in response to the financial crisis. The was aimed to boost spending and investment in the economy which was complemented with the introduction of quantitative easing. In August 2016, the BoE further reduced the interest rate to a record low of 0.25 percent which was later increased to 0.5 percent on 8 February, 2018 (Trading Economics, 2018) with speculation of being increased to 0.75 percent in May 2018. The average interest rate in the UK from 1971 to 2018 is 7.64 percent and the current interest rate of 0.5 percent which will prove attractive to prospective borrowers as the cost of capital is low.

Thus, it is arguable that the supply side characteristics of capital to firms in Nigeria especially SMEs are mainly hindered by interest rate among other bank lending practices. This argument is in line with the studies of Obamuyi (2010) and Adedeji et al. (2018) which reveal that high interest rate and stringent lending policies in Nigeria has been a major setback for firms to obtain loans from banks.

## **2.5 The Five Cs of Bad Credit**

Having discussed the five Cs of good credit which measures the creditworthiness of prospective borrowers by lenders, Golden and Walker (2012) accentuates that 5Cs of bad credit must also be considered in order to prevent another breakdown in the commercial lending system. The five Cs of bad credit as pinpointed by Golden and Walker (2012) are discussed henceforward.

### **2.5.1 Complacency**

Complacency could occur in situations of overreliance on guarantors, overemphasis on past performance and overreliance on large net worth. Therefore, banks and other lending institutions should not be complacent in assessing the creditworthiness of prospective borrowers.

### **2.5.2 Carelessness**

Carelessness of banks and other lending intitutions resulting from inadequate loan documentation, lack of current financial information, insufficient protective loan covenants and improper record keeping. Consequently, banks and other lending institutions should not be careless in the process of credit agreement with prospective borrowers.

### **2.5.3 Communication**

Communication issues resulting from unclear credit-quality objectives by management of banks, lack of upward communication between staff members regarding customers, unclear communication of bank supervision policies and rules by regulators to banks. As such, communication should be clear, concise and attentive to essential information.

### **2.5.4 Contingencies**

Contingencies resulting from inadequate attention to downside risk in credit arrangement, bankers always looking for how to make credit deal work even when the borrower has inadequate capacity, and pricing risk higher in order to compensate for extra risk rather than attempting to control risk. Hence, lenders should not ignore contingencies in credit arrangements.

### **2.5.5 Competition**

Bankers making credit decisions based on the credit arrangements offered by competitors in the industry rather than concentrating on the merits associated with a loan. This will have an adverse effect on the credit standards of banks as they tend to consider the effect of credit arrangement on market position rather than focusing on the profitability of a credit deal. Thus, lending institutions should not be swept away by competition.

## **2.6 Theories of Economic Growth**

The issue of economic growth has drawn considerable attention after the Second World War with contributions from different scholars presenting views on determinants of economic growth and their stability (Verspagen, 1992). According to Pokrovskii (2014), the theories of economic growth attempts to relate the degree of GDP, which measures the current achievements of an entire economy created for a unit of time, with some basic production factors. However, the problem of economic growth is related to the driving forces (Pietak, 2014), sources, forms and effects which was on high on the agenda of economists in the twentieth century (Kurz and Salvadori, 2014).

In this regard, it can be deduced that economic growth is regarded as a principal measure of an economy's prosperity as it shows the aggregate value of goods and services produced in an economy within a specific period. The view of Pietak (2014) argues that the measure of economic growth has some shortcomings. For instance, Pietak (2014) pinpoints that the measure excludes aggregate production from

informal market or 'black market' and amount of time spent in the production process. Additionally, the measure of economic growth excludes negative processes related with economic activities such as noise pollution and other environmental pollution (Pietak, 2014). Despite these weaknesses, economic growth still remains a significant measure of a country's prosperity. As such, the theories of economic growth will be further discussed henceforth.

### 2.6.1 Early Concepts of Growth (Mercantilism and Physiocracy)

Early growth theories originated with mercantilism in the 15<sup>th</sup> to 17<sup>th</sup> centuries. During this period, mercantilists regarded accumulation of wealth as the key source of economic growth through trading activities (McDermott, 1999). According to Sharipov (2015), the influence of mercantilism on economic growth is partly due to development of domestic markets and manufacture. As such, early mercantilists preferred coins and precious metals as absolute liquid materials, while later mercantilists considered the total value of goods and services produced in favour of trade surplus as economic power a nation (Sharipov, 2015).

Thus, the availability of metallic money, especially silver and gold coins provided relevant access to credit facilities and low interest rates on loan. Consequently, there was insignificant amount of industrial capital as capital at this time was in form of trade capital (Sharipov, 2015). Based on this, increase in active trading of available gold and silver coins in circulation became an essential activity to foster economic growth. In this regard, export was welcomed by mercantilists who created a source of metal money inflow to generate trade surplus and sustained economic growth (Osipian, 2007).

During the second half of 18<sup>th</sup> century, mercantilists were replaced by Physiocrats as the other half of early concepts of growth. Physiocracy is a Greek word from 'Government of Nature' developed by French economists. Physiocrats advocated for the relevance of agriculture (Pietak, 2014) as they believed that wealth of nations was generated from value of 'land agriculture' (Sharipov, 2015). As such, Sharipov (2015) further accentuates that the theory of physiocracy was the first to recognise labour as a source of value. However, only agricultural labour was recognised as a value to products in an economy, while non-agricultural and industrial labour was recognised as unproductive to value of products (Marx, 2000). According to Pietak (2014), during one of the meetings of Physiocrats, the spoken words '*laissez faire, laissez passer*'

which means 'let me work, let me go ahead' led to the emanation of economic liberalism of Smith (1776), Ricardo (1817), Marx (1872) and Malthus (1925).

## 2.6.2 Classical Growth Theories

The birth of modern theory of economic growth in the 1950s is related to great classical economists such as: Smith (1776), Ricardo (1817), Marx (1872) and Malthus (1925).

### 2.6.2.1 Smith (1776)

The view of Smith (1776) marks the commencement of classical economics, which regards growth as strictly endogenous by placing unique importance on influence of capital accumulation on productivity of labour (Kurz and Salvadori, 2014). As such, the inquiry of Adam Smith began with his famous book '*The Wealth of Nations*' which was first published in 1776. The book is based on increase in total wealth of a nation through trade rather than gold. The view of Smith on classical economics stresses that the surplus product of a nation is regulated by two different situations: the skill, dexterity and judgement in the general application of labour; and the proportion of employed and unemployed in useful labour (Smith, 1776). According to Smith (1776), the former situation has a crucial long-run importance than the latter as it can be increased without obvious limits.

In line with the ongoing, the contribution of Smith (1776) is focused on an initial examination into growth of income per capita to determine the causes of improvement in productive powers of labour. Additionally, the focus includes the natural distribution of labour productivity between different ranks and conditions of men within the society (Smith, 1776). Hence, Kurz (2010) highlights that the initial work of Adam Smith focuses on growth and income distribution.

According to Pietak (2014), classical economists supports the '*Law of Markets*'<sup>9</sup> initiated by Jean-Baptiste Say. Hence, they observe general self-regulation of markets when free of coercion (Sharipov, 2015). To this effect, Adam Smith regards this as a metaphorical 'invisible hand' which allows markets to move towards natural equilibrium. In such markets, there are several suppliers for buyers to choose from, and companies that cannot withstand competition are allowed to fail (Sharipov, 2015).

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<sup>9</sup> Say's law of markets was developed in 1803. The law states that aggregate production creates an equal quantity of aggregate demand. In other words, supply creates its own demand.

Thus, Smith (1776) stresses the risks of monopoly and significance of competition in markets.

Additionally, Smith (1776) introduces the concept of division of labour as a key determinant of labour productivity, which in turn depends on capital accumulation from market expansion. In this regard, Smith (1776) takes an optimistic view and argues that a larger division of labour enhances larger labour productivity for all firms. This argument is implicitly based on the hypothesis that individual firm in a market operates at constant returns, while total production is based on increasing returns (Kurz and Salvadori, 2014). Thus, division of labour with a particular firm facilitates division of labour amongst firms.

However, Smith (1776) identifies associated psychological and human costs of production as drawbacks of division of labour. Additionally, Mill (1909) asserts that specialisation resulting from division of labour has negative effect on intelligence, and the real losses outweigh the gains. Furthermore, division of labour has a negative impact on mental development of employees, and the social atmosphere in the workplace neutralises damages caused by mechanical performance of work (Marshall, 1935). In another context, Smith (1776) considers the concept of induced and embodied technical progress, learning by using and learning by doing to increase aggregate output. As such, the crucial point in the theory of Smith (1776) is population growth to a maximum or controlled level. Implicitly, when the latter case is achieved, an increase in output per capita would be possible on the long run (Sardadvar, 2011).

#### **2.6.2.2 Ricardo (1817)**

The contribution of Ricardo (1817) to classical economics takes a pessimistic view based on diminishing returns by focusing on how natural course of events affects level of profitability as capital accumulates (Kurz and Salvadori, 2014). In this regard, Ricardo assumes a two-sector economy where constant returns to scale applies in the manufacturing sector, and diminishing returns apply in the agricultural sector (Ricardo, 1817). For agriculture, as capital accumulates and population grows with constant real wage rate of workers, the rate of profit is bound to fall to almost zero resulting from intensive and extensive diminishing returns on land (Ricardo, 1817).

In this regard, Ricardo (1817) asserts that every increase in capital employed on the land, will lead to decreased rate of production on the land. Consequently, the view of Sardadvar (2011) highlights that as the rate of profit reduces; accumulation of capitalism is curtailed, which will lead the economy to its stationary state where



landlords take all surplus. In Nigeria, agriculture remains the base of the economy and employs two-thirds of aggregate labour force despite the country's high dependence on oil (FAO, 2019). Hence, it is arguable that the view of Ricardo on economic growth remains applicable in the Nigerian context and other countries still practicing reasonable level of agriculture.

Comparing the views of Smith (1776) and Ricardo (1817), Smith (1776) argues that capital accumulation will systematically facilitate improvements in productive powers, regarded as endogenous phenomenon. On the other hand, Ricardo (1817) argues that improvements in productive powers are the outcomes of particular events not necessarily associated with capital accumulation, regarded as exogenous phenomenon.

#### **2.6.2.3 Marx (1872)**

A couple of decades after the work of Ricardo (1817), a further contribution to economic development and growth emanates in the studies of Marx (1872). As such, Marx (1872) considers production to be associated with reproduction, differentiates consumption from savings, and accounts for technological progress and depreciation for physical capital accumulation model. In this model, a portion of surplus value created in a specific period is consumed, while the other portion becomes the capital of the next period. Hence, 'capital has generated capital' (Marx, 1972).

As such, growth manifest itself following increasing physical capital relative to labour and increasing productivity of labour resulting from technological progress (Sardadvar, 2011). In line with this, Marx (1972) opines that the growth of labour-demand is too low to offset decrease in employment resulting from technological progress. Thus, unemployment will increase in the long-run until capitalism is eradicated.

#### **2.6.2.4 Malthus (1925)**

By the same token with Ricardo (1817), the contribution of Malthus (1925) to classical economics is also based on a pessimistic view of diminishing returns of factors of production. In this regard, Malthus (1925) describes growth in population in relation to increase in production. As such, when population grows exponentially, with arithmetic growth in means of subsistence, this will result to imminent exhaustion of the earth. This will further lead to struggle for limited resources, increase in epidemics, wars and hunger (Lavrov and Kapoguzov, 2006). In response to this, Malthus (1925) proposes the concept of '*call to prudence*' in order to restrain population growth by

focusing on the poorest and birth of children only when means of subsistence for a decent life are provided.

By and large, the main concern regarding economic growth focuses on the driving forces which determine economic growth within an economy. Thus, following the classical economic growth theories as earlier reviewed, it can be deduced that the main factors influencing economic growth are land, labour and capital.

### 2.6.3 Innovative Growth Theory

Another significant contribution to growth theory is the study of Schumpeter (1911) titled 'The Theory of Economic Development'. As such, Schumpeter (1911) emphasises on the role of 'innovation' in relation to technological progress, with less stress on role of capital accumulation. In this regard, Schumpeter (1911) consistently differentiates between economic growth and economic development, where the latter is facilitated by endogenous factors resulting to ground-breaking innovation. Hence, this helps to change technique and production within an organisation (Sardadvar, 2011).

Schumpeter (1926) builds on the earlier study of Schumpeter (1911) and asserts that the starting point of innovative theory is the condition of steady state or pure equilibrium. As such, changes in economic situation due to several factors are determinant of development. However, entrepreneurial innovation is considered as the main driver of development. In this regard, the view of Schumpeter (1926) identifies the significant role of entrepreneur in pioneering new technologies which drives economic development. Based on the Schumpeterian view, entrepreneurs are regarded as creative individuals characterised as being proactive, initiative and risk taker (Sardadvar, 2011).

In line with the ongoing discussion, Aghion and Akcigit (2015) highlights that the Schumpeterian paradigm relies on three main ideas. First, long-run reliance on innovations in order to enhance productivity of labour or capital, product or organisational innovations. Second, innovations occur from investments on research and development (RandD) and firms' investments on acquisition of skills and search for new markets. As such, the role of public intervention in the growth process is considered. This is resulting from the fact that innovations generate positive knowledge spill overs which cannot be fully internalised by private firms due to credit market imperfections. Third, new innovations tend to make old innovations, old skills and old technologies obsolete. As such, growth is a process enhanced through a

conflict among new and old innovations: old innovators tend to resist new innovations which will render their activities obsolete.

#### 2.6.4 Keynesian and Post-Keynesian (Neo-Keynesian) Growth Theories

Keynesian and neo-Keynesian theories commence from the seminal work of Keynes (1936) titled '*The General Theory of Employment, Interest and Money*'. The view of Pietak (2014) postulates that classical growth theories focus on supply and Keynes places more emphasis on demand which was influenced by the experience of the Great Depression lasting from 1929 to 1939. In this regard, Keynes (1936) believes that expansion of aggregate demand should enhance economic growth. As such, Keynes (1936) disapproves the notion of classical economics and Say's law of markets by arguing that achieving long-run steady state in an economy is unrealistic (Pietak, 2014). In this regard, Keynes (1936) recognises that the nature of economic growth is unbalanced based on the nature of economic mechanism. Consequently, the contribution of Keynes (1936) focuses on short term developments through the interplay of income, consumption, savings and investments (Sardadvar, 2011; Sharipov, 2015).

In line with the foregoing, Keynes (1936) stresses that during a period of recession and increasing unemployment, consumers experience reduction in income which further causes reduction in consumption, savings and investments. Hence, Sharipov (2015) highlights that an economy without market leverage to revive business activities by increasing aggregate demand requires government intervention of fiscal policy. As such, expansionary fiscal policy measures require tax cuts or increase in government spending to increase aggregate demand during recession. However, Pietak (2014) emphasises that the theory of Keynes (1936) fails to consider passage of time as it focuses on short term developments. In the light of this, other economists build on the work of Keynes in order to seek for a long-run balance which gave birth to post-Keynesian or Neo-Keynesian growth theory.

As such, Harrod (1939) was the first economist to focus on the rate of growth based on the multiplier accelerator relationship. In this regard, the theory of Harrod (1939) allows ratio of investment growth to be determined in relation to growth in income. Thus, the theory of Harrod describes a mechanism of balanced growth based on the functional relationship among income, savings and investments on the one hand, and analysis of entrepreneurs' expectations on the other hand (Sharipov, 2015). Additionally, the actual growth rate in an economy is determined by growth rates of

labour and capital at full utilisation of existing resources or warranted growth. In this context, a stable dynamic equilibrium in an economy is achieved when warranted growth rate is equal to natural rate which is the maximum possible rate of economic growth with full utilisation of labour force (Sharipov, 2015).

Shortly afterwards, another economist, Domar (1946) contributed to the work of Keynes (1936). In this regard, the contribution of Domar (1946) emphasises the significance of a dynamic view to ensure insights into long run growth is derived (Sharipov, 2015). Consequently, Domar (1946) argues that investment is not only a factor of income but also a factor of generating production capacities. Thus, investment is considered a factor of development with the production and supply of goods within an economy.

As such, the theory of Domar (1946) focuses on the rate at which investment should grow in order to ensure revenue growth. The theory also highlights that growth rate of investment is based on marginal propensity to save and average efficiency of investments within an economy (Sharipov, 2015). Consequently, Domar (1946) stresses that a dynamic balance between aggregate demand and supply within an economy is achieved through continuous accumulation of capital resulting from growth in investment (Sharipov, 2015). In line with this, Domar (1946) postulates that determining productivity of capital through sustaining a balanced growth of investments can be influenced by rate of technological progress or share of savings in national income.

Following the independent contribution of Harrod (1939) and Domar (1946) in expanding the Keynes (1936) view by using short-run tools to study long-run problems, the two similar theories subsequently gave birth to the Harrod-Domar growth model. Based on the undesirable outcomes and implausible assumptions of Harrod-Domar theory (Barro and Sala-i-Martin, 1995), the model has become primarily historical interest. However, the theory remains appreciated as a transitional stride between classical and neoclassical growth theories.

## 2.6.5 Neo-classical Growth Theories

### 2.6.5.1 Exogenous Growth Theory

The contribution of classical economists stresses on competitive behaviour, equilibrium and the influence of diminishing returns on capital accumulation and labour productivity. These elements remain essential to neoclassical approach to growth theory (Diaz-Bautista and Gonzalez-Andrade, 2014). More importantly, the birth of neo-classical growth theories follows the long-run contribution of Harrod-Domar. The foundation of neo-classical growth theory begins with the literature of Solow (1956). As such, Solow (1956) supports the assumptions of Harrod-Domar excluding that of fixed proportions of labour and capital as drivers of equilibrium growth. The Solow model centres on a closed economy where output ( $Q$ ) is determined by labour ( $L$ ) and capital ( $K$ ) as expressed in the production function.

$$Q_t = f(K_t, L_t) \quad (2.6)$$

In equation 2.6 above,  $t$  denotes time and the critical assumption of the function is that it reveals constant returns to scale. As such, the contribution of Solow (1956) at this juncture departs from the assumption of classical economics that recognises scarce land or other non-augmentable resources (Sardadvar, 2011). Another notable contribution to neoclassical growth theories emanates in the study of Swan (1956), which gave birth to the famous Solow-Swan long-run economic growth model. Thus, the Solow-Swan growth model has become a benchmark for neo-classical theory of growth.

The aim of Solow-Swan model is to provide a theoretical framework for understanding global growth of output and the diligence of geographical differences in per capita output (Mulder, De Groot and Hofkes, 2001). As earlier identified in equation 2.6, aggregate output ( $Y$ ) depends of capital ( $K$ ) and labour ( $L$ ) based on a constant returns to scale production function as the factor shares are restricted to equal 1 in equation 2.7. Additionally, the Solow-Swan model introduces technological progress in terms of an aggregate parameter ( $A$ ) to reflect the current situation of labour-augmenting technological knowledge. The model takes a Cobb-Douglas production function in consistent with constant labour and capital income as in equation 2.7.

$$Y = (AL)^{1-\alpha} K^\alpha, \quad 0 < \alpha < 1 \quad (2.7)$$

Where the exponents  $\alpha$  and  $1 - \alpha$  represent output elasticities of capital and labour respectively. In this regard, the marginal product of each factor appears to be very large when its amount is small and becomes very small when its amount is large. Hence, the production function satisfies '*Inada conditions*'<sup>10</sup> which implies that convergence of per capita income and marginal products of capital and labour moves to zero (0). Hence,  $L$  and  $A$  grows at an exogenously determined rate of  $n$  and  $g$  respectively as shown in equations 2.8 and 2.9.

$$L(t) = L(0)e^{nt} \quad (2.8)$$

$$A(t) = A(0)e^{gt} \quad (2.9)$$

From equations 2.8 and 2.9 above, the number of effective units of labour  $A(t)L(t)$  grows at a rate of  $n+g$ . Additionally, the model assumes that constant portion of output is invested in form of savings rate. According to Mulder, De Groot and Hofkes (2001), the assumption of exogenous savings rate is not vital to the neo-classical growth model. However, it helps to simplify analysis of the model. In this regard, an economy converges to the path of balanced growth where growth of output and capital on the long-run are influenced solely by the rate of population growth and labour-augmenting technological progress.

In line with this, an economy converges to a steady situation in which diminishing returns are precisely offset by exogenous technological progress. Another neo-classical growth model emanated from the work of Ramsey (1928) which focuses on the problem of optimal level of savings. As such, Ramsey (1928) identifies rate of savings as endogenous which depends on the decisions of consumers. The work of Ramsey (1928) was later developed by Cass (1965) and Koopmans (1965), often regarded as Ramsey- Cass- Koopmans model. The results of the model on steady growth rate are similar to Solow-Swan model.

In another neo-classical model, Diamond (1965) introduces analysis of finite horizons in households based on two periods. In the first period, household earn wages and spend on current consumption and savings. On the other hand, households do not earn in the second period, and households finance current consumption by accumulated savings from the first period (Diamond, 1965). In this regard, an

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<sup>10</sup> Inada conditions is named after a Japanese economist; Ken-Ichi Inada. The conditions are set of assumptions that guarantee the stability of economic growth in a neoclassical growth model.

economy reaches a stable situation in the long-run as in Solow-Swan model (Diamond, 1965).

Following the assumptions of highlighted neo-classical models, an economy achieves equilibrium in the long run with convergence, which implies faster development for poorer countries in comparison to richer ones (Pietak, 2014). Additionally, Pietak (2014) highlights that convergence hypothesis posits that capital/labour ratio of countries differ while they have the same steady condition. Thus, countries with lower degree of income per capita will tend to have a higher growth rate (Pietak, 2014).

Despite the important contribution of Solow-Swan model on economic growth, there are some weaknesses of this 'old' or exogenous neo-classical approach. For instance, the model only explains the behaviour of variables identified as growth drivers. In other words, the model explains growth by merely postulating its existence (Mulder, De Groot and Hofkes, 2001). Additionally, using the model for growth accounting, it fails to explicate growth rate of output based on accumulation of physical inputs (capital and labour).

In this regard, adjustment of output growth causes a large and consistent increase in physical inputs regarded as Solow residual. Hence, factors other than accumulation of capital and increase in labour force should be driving force of most economic growth in occurrence (Mulder, De Groot and Hofkes, 2001). According to Mulder, De Groot and Hofkes (2001), Solow residual is often regarded as 'measure of ignorance' which captures primary driving force of growth or technological progress. It is against these backdrops that endogenous theory of growth emanated to provide an understanding of driving forces behind technological progress. Empirical studies such as Gustavsson and Osterholm (2012), Smetkowski (2017), Rami (2018), Grigoli, Koczan and Tapalova (2018), Rani and Kumar (2019), Aslan and Altinoz (2020), Oyebowale and Algarhi (2020), Khan (2020), Yasmeen et al. (2021), support the relevance of labour and capital as drivers of economic growth.

#### **2.6.5.2 Endogenous Growth Theory**

Following the highlighted weaknesses of exogenous growth theory of Solow-Swan, a new wave of research emanated in contribution to the debate on economic growth which gave birth to new or endogenous theory. The seminal work on endogenous growth theory is the study of Arrow (1962), which assumes that there are essential externalities in form of general technological knowledge available to all firms in



developing new methods of production. In other words, Arrow (1962) assumes that growth rate of labour effectiveness is a result of '*learning by doing*'. Consequently, labour productivity now becomes endogenous based on an increasing function of cumulated aggregated firms' investment (Mulder, De Groot and Hofkes, 2001).

An essential feature of Arrow model is that learning is considered as a public good; the outcome of experience at aggregate economy level which can be utilised by all firms in an economy at no cost (Arrow, 1962). The view of Mulder, De Groot and Hofkes (2001) further highlights that in taking a decision on how much to invest on labour productivity, firms disregard the effect of such investment on total amount of knowledge available in the economy since the effects are external to individual firm.

Building upon the study of Arrow (1962), the quest to endogenise technological progress took a new forward dimension in the study of Romer (1986). The model of Romer (1986) posits that technology grows proportionately to macroeconomic capital stock which prospectively offset effects of diminishing returns. In this situation, capital is recognised as human and physical capital. On the one hand, equilibrium model of endogenous technological change drives long-run growth primarily through the accumulation of knowledge by forward-looking and profit-maximising agents (Romer, 1986). Hence, it can be deduced that knowledge is regarded as a basic form of capital in this context. On the other hand, physical capital can be generated one for one from forgone output (Romer, 1986).

Be that as it may, the model of Romer (1986) is based on three elements. First, investment in knowledge by agents in an economy implies a natural externality. Second, given a stock of knowledge, an extra input into research will not produce extra new knowledge. This implies decreasing returns in production of new knowledge (Romer, 1986). Third, since knowledge cannot be kept secret or perfectly patented, the creation of knowledge by a firm within an economy is assumed to have a positive external impact on production possibilities of other firms (Romer, 1986).

As such, level of production based on stock of knowledge and other inputs illustrate increasing returns; more specifically, marginal product of knowledge may increase to indicate growth without bound. Having highlighted the three elements, Romer (1986) emphasises that a combination of these three elements produce a well-specified competitive growth model. The contribution of Romer (1986) is commonly known as 'AK Model' derived from its resulting production function of the form  $Y=AK$ . The production function for individual firm is expressed in equation 2.10.



$$Y_i = [A_i(K, L)L_i]^{1-\alpha} K_i^\alpha \quad (2.10)$$

Where  $Y$  is output or economic growth,  $A$  is constant,  $K$  is capital,  $L$  is labour. Since the knowledge available to a firm as a public good is associated with the wide stock of capital and labour in the economy.

By the same token, Lucas (1988) provides further contribution to endogenous theory of growth to affirm the previous work of Romer (1986). As such, Lucas (1988) also identifies two types of capital: physical capital which is accumulated and utilised in production, and human capital which augments productivity or combination of labour and physical capital. Consequently, the study of Lucas (1988) highlights and compares three models: a model stressing accumulation of physical capital and technological change, a model emphasising accumulation of human capital through schooling, and a model emphasising accumulation of specialised human capital through learning-by-doing. By and large, the contributions of Romer (1986) and Lucas (1988) paved way for new or endogenous growth theory by building on the earlier study of Arrow (1962) to address the weaknesses of old or exogenous growth theory.

As a new theoretical framework, several studies have examined the influence of human capital on economic growth. For instance, the study of Bayraktar-Saglam (2016) which investigates developing and OECD countries reveals that human capital (secondary and tertiary education) has predictive power on economic growth in developing countries, while economic growth does not predict human capital in developing countries. On the other hand, human capital and economic growth exhibit feedback effect in OECD countries. Siddiqui and Rehman (2017) reveals significance of human capital on economic growth in East and South Asia. The study of Barcenilla-Visus and Lopez-Pueyo (2018) finds evidence to support that human capital influences economic growth in euro area countries.

Additionally, positive and statistically significant relationship between human capital and economic growth is shown in the studies of Patterson and Patterson (2012), Sulaiman et al (2015), Dutta and Sobel (2018), Chang, et al., (2018), Zhu and Li (2017); Haini (2019); Castello-Climent (2019), Affandi, Anugrah and Bary (2019); Hasyati and Sahara (2020); Han and Lee (2020); Hasyati and Sahara (2020); Uddin, Ali and Masih (2020); Ngepah, Saba and Mabindisa (2020); Maneejuk and Yamaka (2021), Ozbal (2021), among others.

In Nigeria, the studies of Sulaiman et al. (2015), Omitogun, Osoba and Tella (2016), Ogunleye et al. (2017), Osoba and Tella (2017), Ozekhome (2018), Oyinlola and Adededeji (2019), Ogunjobi, et al. (2021) show that human capital and technology have positive impact on economic growth. The studies of Oyedokun and Adeyemi, (2018) show that human capital has negative impact on economic growth in Nigeria. However, studies of Anyanwu et al. (2015) and Fashina et al. (2018) reveal that human capital does not granger cause economic growth in Nigeria.

Based on the reviewed theories of economic growth, it can be deduced that labour and physical capital are the commonly discussed determinants of economic growth among economists since the inception of classical economics. However, the new or endogenous theories introduce human capital as a driving force behind technological progress in the growth model. Consequently, these economic growth theories have provided a basis to develop robust empirical models for this study. As such, this study will integrate labour, physical capital and human capital with bank lending in order to achieve the aim of the study.

## **2.7 Conceptual Framework**

The conceptual framework for this study commences by acknowledging the contribution of earlier studies which have created a foundation for other studies including this current study. Undoubtedly, this acknowledgement is directed to the studies of Bagehot (1873) and Schumpeter (1911) which are pioneers of the finance-led growth view by stressing the significance of financial sector on economic growth. Additionally, this study acknowledges the contribution of Robinson (1952) which proposes that increase in output or economic growth pushes demand for financial services, leading to the introduction of growth-led finance view. Furthermore, this study acknowledges the study of Patrick (1966) which reconciles the aforementioned views under demand-following and supply-leading hypotheses.

In this regard, the conceptual framework for this study adopts the bank lending channel of Bernanke and Blinder (1988) and Kashyap and Stein (1994) to reinforce the significance of banks in channelling funds from savings surplus units (SSUs) to savings deficit units (SDUs) for productive use. As such, this study ascribes to the postulation of indirect finance or bank-based theoretical view of financial systems by acknowledging the role of banks in enhancing economic growth through lending. In this line of reasoning, the conceptual framework follows key studies on bank-based

view such as: Klein (1971), Benson and Smith (1976), Fama (1980), Diamond (1984), Allen and Santomero (1997), and Scholtens and Wensveen (2000).

It is pertinent to highlight that this study also acknowledges the importance of other theoretical views on financial systems (market-based view, financial services view and legal-based view). However, the motivation of this study is driven towards bank-based view which provides this study a germane stance for investigation. Furthermore, this study acknowledges the financial intermediation theory into a schematic idea which provides the conceptual framework for this study.

The conceptual framework as illustrated in Figure 2.4 will henceforth be regarded as 'The Flow of Lending'. The journey of the flow commences with the existence of economic agents who earn more than their spending on basic needs known as savings surplus units (SSUs). These economic agents usually have left over after covering their monthly expenses. Hence, they serve as inflow into the flow of lending through deposits in banks. As such, the bank-based view of financial systems emanates from banks collecting deposits from SSUs. This is shown by the black arrow pointing to 'Banks as financial intermediaries' from 'SSUs'. This starting point supports the financial intermediation theory of banking and literature of Klein (1971), Benson and Smith (1976), Fama (1980), Diamond (1984), Allen and Santomero (1997), and Scholtens and Wensveen (2000).

Whilst some economic agents earn more than they spend, some economic agents spend more than they earn and need to borrow from the former to sustain themselves; these economic agents are regarded as Savings Deficit Units (SDUs). Hence, SDUs will search for banks in order to access required funds which have been initially deposited by SSUs. As such, the role of banks in the financial intermediation process is revealed through credit creation by lending initial deposits of SSUs to SDUs. However, just a specific portion of the funds deposited by each SSU is available in creation of credit to SDUs.

At this stage, the process of credit creation of banks follows the 'supply of credit' model of Blinder (1987), while increase in demand by SDUs follow the 'demand for credit' model of Blinder (1987) serves as an outflow from the flow of lending which is depicted by the red arrow pointing to 'SDUs' from 'Banks as financial intermediaries'. It is essential to pinpoint that the practicality of financial intermediation by banks will be further supported with application of five Cs. The relevance of five Cs as this stage of the flow is to ensure banks can measure the creditworthiness of SDUs before

issuing out loans which supports the assertions of Strischek (2009), Golden and Walker (2012) and Adedeji et al. (2018).

Progressively, the bank lending will cause increase in capital to SDUs which will concurrently enhance investment and spending into different sectors of the economy. This flow is further depicted using the red arrows flowing from 'SDUs' to different economic sectors within an economy; the framework assumes an economy with just four sectors. Consequently, aggregate economic output will be increased which concurrently facilitates economic growth in support of the finance-led growth view of Bagehot (1873) and Schumpeter (1911) or supply-leading hypothesis of Patrick (1966) as shown with the red arrow flowing from 'aggregate economic output' to 'economic growth'. Additionally, this stage supports a unidirectional causality running from finance to growth as in the empirical studies of Marashdeh and Al-Malkawi (2014), Kumar (2014), Fethi and Katircioglu (2015), and Deyshappriya (2016), and the financial liberalization prescription of McKinnon (1973) and Shaw (1973).

Additionally, SDUs will concurrently gain return on investment by generating additional income from investments and spending. By so doing, SDUs will be able to cover their expenses and pay off deficits. Hence, SDUs can become SSUs and further provide injection into the flow of lending in form of deposits to banks. Initially, SDUs required funds as capital which was obtained from banks through lending, later SDUs through investment and spending within an economy increases bank deposits from the profits generated from investments. This link is shown by the black arrows flowing from 'return on investment' to 'SSUs', and from 'SSUs' to 'Banks as financial Intermediaries'. In this regard, it is arguable that the flow of lending continues to be an effective mechanism to show the relationship between economic agents and banks as financial intermediaries within an economy.

In line with the above linkages, it is arguable that the framework will contribute meaningfully to answering the identified research questions. This is so as the study seeks to investigate the impact of sectoral bank lending on economic growth in Nigeria which has been depicted theoretically using the flow of lending. As such, without this conceptual framework, it will be challenging for the researcher to create a suitable framework for this study. Hence, providing suitable answer to the identified research questions or fulfilling outlined research objectives may seem unfeasible. In this regard, the flow of lending which is a theoretical representation of the variables under investigation will aid the researcher to examine the role of banks as financial

intermediaries in enhancing economic growth in Nigeria through a sectoral perspective. Consequently, the framework provides a guide to investigate the supply-leading hypothesis or finance-led growth view.

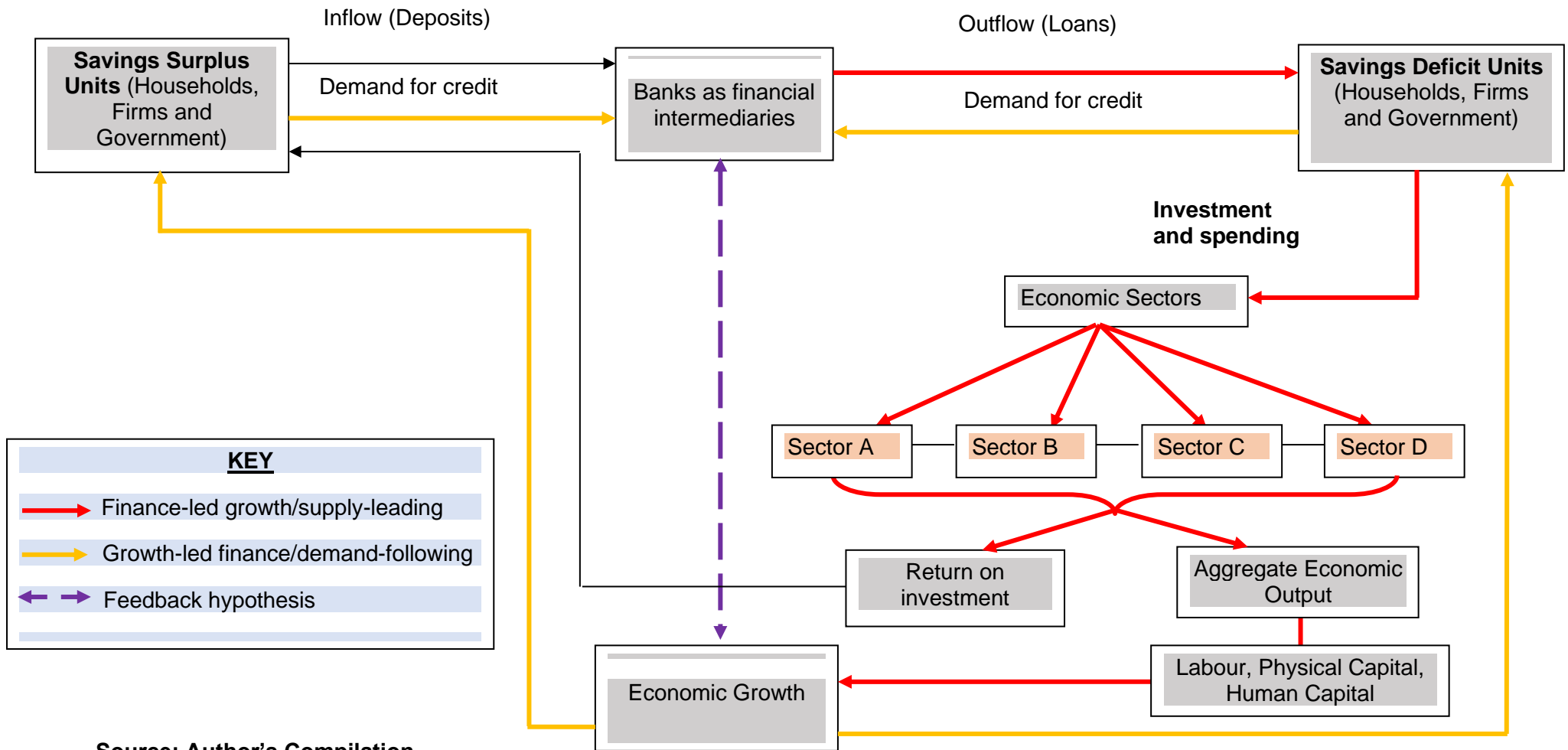
At a later stage of economic growth, the demand for innovative and sophisticated financial services increases to meet the level of economic growth; for instance, use of derivatives. As such, economic growth seeks to enhance finance, postulating the growth-led finance view or demand-following hypothesis which is shown with yellow arrows on the framework flowing from economic agents (SSUs and SDUs) to 'banks as financial intermediaries'. At this stage, the process of economic actors demanding for credit to meet level of economic growth follows the 'demand of credit' model of Blinder (1987). In line with this, this study supports the feedback hypothesis on finance-growth nexus and argues that utmost efficiency of financial intermediation on economic growth should be determined by the dual effect of supply-leading and demand-following phenomena in any economy. This relationship is shown with purple arrow showing interconnection between 'economic growth' and 'banks as financial intermediaries'.

As such, this will further enhance the effectiveness of the flow of lending in any economy. Be that as it may, this framework provides a guide to investigate bidirectional causality views or feedback hypothesis as it helps the researcher to understand the theoretical relationship between finance-growth nexus. In the light of this, the outcome of this study will help to proffer recommendations to the incessant hindered level of economic growth in Nigeria by identifying unproductive sectors within the economy.

However, there are some weaknesses in the flow of lending which will be highlighted. First, the flow of lending only ascribes to bank lending channel of monetary policy transmission without considering other channels. Second, the framework only ascribes to indirect finance or bank-based theoretical view on financial systems. As such, the evidence to be provided by the outcome of this research will be focused on investigating influence of bank lending channel on economic growth which is the main aim of the research. In this regard, it can be deduced that despite the highlighted weaknesses of this conceptual framework, the flow of lending still provides a meaningful contribution to answer the research questions and achieve the research aim of this study. This has been made possible through extensive review of relevant

literatures and discussion about the appropriate theories relating to the topic under investigation.

Figure 2.4: Conceptual Framework of the Study



Source: Author's Compilation

## 2.8 Chapter Summary

This chapter provided a review of relevant literature and discusses the theoretical framework underpinning the study. As such, this chapter has provided a basis to achieve three research objectives highlighted in this study: by exploring and discussing the bank lending channel and theoretical views on financial systems, by exploring and reviewing theories of economic growth theories and by developing a suitable conceptual framework, this chapter provides detailed understanding and integration of relevant theories and empirical studies. Hence, this chapter is relevant to this study as it will help to develop robust empirical models based on theories. Thus, completion of this chapter has provided a further step to examine the impact of sectoral bank lending on economic growth in Nigeria. In this regard, this chapter has provided a guidance to answer the identified research questions and fulfil the aim of the study. The next chapter focuses on discussion and justification of the adopted research methodology for this study.



## CHAPTER THREE

### RESEARCH METHODOLOGY OF THE STUDY

#### 3.1 Chapter Introduction

In the previous chapter, the relevant theories and literature underpinning the study have been explored and discussed. Consequently, a conceptual framework regarded as 'The Flow of Lending' has been developed for the study to provide a direction towards answering the highlighted research questions. As such, this chapter provides a discussion and justification for the research methodological framework for the study. Thus, the relevance of this chapter is to provide a basis to fulfil research objective five, by developing suitable empirical models for aggregated and disaggregated sectors, based on theories and existing studies.

#### 3.2 Research Philosophy

The view of Creswell and Creswell (2018) asserts that research philosophy is a set or system of beliefs emanating from study of the fundamental nature of knowledge, reality and existence. In a similar vein, Saunders, Lewis and Thornhill (2019) refers research philosophy as a system of assumptions and beliefs regarding development of knowledge. As such, researchers tend to make different types of assumptions consciously or unconsciously at every stage of a research process (Collis and Hussey, 2014).

In addition to this, Saunders, Lewis and Thornhill (2019) further accentuates that these assumptions are focused on realities encountered in research (ontological assumptions), assumptions about the knowledge of human (epistemological assumptions) and the degree at which values of researchers influence the research process (axiological assumptions). Hence, the selection of a well-thought-out and reliable set of assumptions will comprise of a credible research philosophy, which will underpin selection of appropriate research design for a study (Creswell and Creswell, 2018). In this regard, the set of assumptions selected for this study are discussed hereafter.

##### 3.2.1 Ontological Assumption

The renowned earlier literature of Crotty (1998) regards ontology as the study of being as it focuses on 'what is', with nature of existence and structure of reality. By the same token, recent literatures such as Reed (2011), O'Gorman and MacIntosh (2014), Collis and Hussey (2014) and Easterby-Smith et al. (2018) postulate that ontology or

ontological assumptions is focused on the nature of reality or the set of assumptions researchers make towards the nature of the phenomena or object being investigated. Such phenomena or object in business and management research include organisations, working lives of individuals, management and artefacts (Saunders, Lewis and Thornhill, 2018). According to Crotty (1998), the major ontological debate in recent centuries has been between realism and idealism.

On the one hand, realism ontological assumption focuses on extramental reality (Crotty, 1998) as it considers social entities to be physical entities of the natural world that exist independently of the researcher (Saunders, Lewis and Thornhill, 2018). As such, realists believe there is only one reality and everyone has the same sense towards the reality (Collis and Hussey, 2014). On the other hand, idealism argues the stance of realism as it focuses on the existence of multiple realities. Hence, idealists generate different ideas using their own sense of reality from the multiple realities (Collis and Hussey, 2014; Silverman, 2017).

Going by the above discussion, the ontological assumption of this study embraced realism; this is because the social entity under investigation (economic growth in Nigeria) exists independently of the researcher. In this regard, based on review of relevant literatures and theories, the researcher has made an ontological assumption that causal relationship exists between sectoral bank lending and economic growth. Thus, for the purpose of this study, the researcher took the stance of realists and embraced realism, and disapproved idealism and constructionism ontological assumptions. Furthermore, as this study involves seeking cause and effect among variables using statistical analysis, Blaikie (2007) regards this as shallow realism which enhances researchers to discover empirical regularities between observable events.

### **3.2.2 Epistemological Assumption**

Having established ontology as the nature of reality, it is equally essential to understand how researchers seek knowledge about the nature of reality. As such, the philosophy of epistemology emanates. Epistemological assumption focuses on what researchers accept as valid knowledge (Williams, 2016) and how knowledge can be communicated to others (Saunders, Lewis and Thornhill, 2019). Hence, it involves an investigation between the researcher and the phenomena under investigation (Collis and Hussey, 2014). In a simpler manner, Crotty (1998) regards epistemology as 'how

we know what we know', and provided three epistemological assumptions: objectivism, subjectivism and constructionism.

Objectivism takes the stance of natural sciences as it posits that phenomena which are observable and measurable can only be validly regarded as knowledge (O'Gorman and MacIntosh, 2014; Robson and McCartan, 2016). Hence, knowledge about reality exists apart from operation of any consciousness (Crotty, 1998) or independent of the researcher (Robson, 2011; Collis and Hussey, 2014). Subjectivism posits that knowledge about reality is imposed on the object by the subject, while constructionism suggests that truth or knowledge can be constructed by the subject through interaction or engagement with the objects (Crotty, 1998). As such, objectivism is associated with quantitative research, while subjectivism and constructionism are associated with qualitative research. According to Smith (1983), facts act to constrain beliefs of researchers in quantitative studies, while beliefs of researchers determine facts in qualitative.

Following the ontological assumption of this study as previously justified, the epistemological assumption of this study embraced objectivism as the study relied on measurable variables in order to achieve the aim of the research. This is evident in the use of macroeconomic indicators to establish the relationship between the sectoral bank lending and economic growth in Nigeria. Furthermore, the researcher's position remained independent of social reality and did not involve participation of the researcher in any form to determine knowledge embedded in reality. Thus, in line with realism ontological assumption, this study complementarily ascribed to objectivism epistemological assumption, which further instigated the choice of a quantitative research method for the study. As such, this supports the notion of Smith (1983) that facts constrain beliefs of researchers. This notion has led the researcher to develop statements of hypotheses tested in the research.

In this regard, the findings of this study are objective and likely to be generalisable. Nonetheless, the view of Saunders, Lewis and Thornhill (2016) argues that objectivism does not tend to offer complex and rich organisational realities, consider divergence in individual experiences and contexts, and perhaps does not propose essential new understanding about the world. In response to this, this study argues that the assertions of Saunders, Lewis and Thornhill (2016) are related to idealism ontology which proposes existence of multiple realities. For this study, the justification for selection of realism ontology has been grounded, based on the assumption of the

researcher towards one reality- economic growth can be influenced by sectoral bank lending. Also, the underlying assumption did not require interaction with objects to determine differences in contexts and experiences of individuals. Hence, objectivism epistemological assumption was suitable to derive the knowledge embedded in the realism ontological assumption of this study. Consequently, subjectivism and constructionism epistemological assumptions were deemed unsuitable for this study.

### **3.2.3 Axiological Assumption**

Axiology is concerned with the role of values in research (Collis and Hussey, 2014) which is viewed as the collective term for ethics and aesthetics (O'Gorman and MacIntosh, 2014). The view of O'Gorman and MacIntosh (2014) further affirms that values in axiology is different from research ethics related to data collection, rather values inform elements of bias from the researcher integrated into the research process. As such, axiological assumption can be categorised into two: value-free and unbiased, and value-laden and biased. Based on the ontological and epistemological assumptions of this study, it can be deduced that the axiological assumption of this study embraced value-free and unbiased position.

The justification for this is the researcher was detached from the objects which made the researcher independent of the research. A further justification for this is revealed by the assertion of Bryman and Bell (2015) which affirms that the belief of the researcher towards studies like this current study is to examine interrelationship among the objects. As such, the objects under investigation have been in existence before the interest of the researcher and will continue to exist after the completion of this study. Hence, through an objective stance, this study embraced a value-free and unbiased axiological assumption in comparison to subjectivist studies where process of inquiry or interaction can influence the researcher and participants leading to value-laden and biased axiological assumptions.

### **3.2.4 Rhetorical Assumption**

Rhetorical assumption in research focuses on the use of language in research which is determined by the other three assumptions previously discussed. In this regard, rhetorical assumptions can be formal or informal. On the one hand, formal tone is applicable to convey impression to readers that a research was objective by following careful procedures, and results of the study was not distorted by personal opinions and values of the researcher (Collis and Hussey, 2014). On the other hand, informal tone is applicable to subjective research as it allows the use of personal voice

expressed with personal pronouns to reflect immediacy of research and the involvement of the researcher (O'Gorman and MacIntosh, 2014; Collis and Hussey, 2014; Lee and Saunders, 2017).

For this study, the researcher ascribed to the use of formal tone rhetorical assumption which corresponds to objectivism epistemological assumption in order to express the research findings of the study. Additionally, the justification for the adoption of a formal tone in this research followed independent stance of the researcher from the objects, which did not initiate the use of personal pronouns due to non-involvement of the researcher. Hence, the use of an informal tone appeared unsuitable as it does not align to the ontological, epistemological and axiological assumptions of this study.

### **3.3 Research Paradigm**

According to Collis and Hussey (2014), research paradigm is a philosophical framework guiding the conduct of scientific research. In a similar vein, the view of Harre (1987) regards research paradigm as a combination of metaphysical theory regarding nature of objects and a significant method to acquire knowledge about those objects. An earlier definition of Kuhn (1962) as cited in Collis and Hussey (2014) asserts that research paradigms are universally identified scientific achievements which provide model issues and solutions to community of practitioners. Following the definition of Kuhn which focuses on scientific achievements, only one research paradigm was in existence for several hundreds of years in relation to natural sciences. However, over the years, different ideas about reality and nature of knowledge have emanated which has resulted to the development of another paradigm in relation to social sciences (Collis and Hussey, 2014). Hence, there are two main research paradigms based on underlying philosophical assumptions of the researcher: positivism and interpretivism.

On the one hand, positivism paradigm has its root in realism philosophy, and was first initiated by French theorist and philosopher; August Comte (1798-1857). This was followed by other theorists such as John Stuart Mill (1806-1873), a British philosopher and Emile Durkheim (1858-1917), a French sociologist. According to Creswell and Creswell (2018), positivism paradigm is underpinned by the belief of objectivism as it instigates that reality is independent of researchers. As such, knowledge about reality is derived through investigating causal relationships among variables, which is explained and/or predicted by theories (Collis and Hussey, 2014). Consequently, positivists apply logical reasoning while investigating social reality to enhance

precision, objectivity and rigour, rather than subjectivity and instinctive interpretation (Saunders, Lewis and Thornhill, 2019; Creswell and Crewell, 2018). In line with the ongoing, positivism assumes social phenomena can be measured, which is associated with quantitative methods analysis or the use of statistical tests on quantitative data.

On the other hand, interpretivism paradigm emanated from perceived insufficiency of positivism to doctrine of social sciences. In this regard, interpretivism is supported by the belief that social reality is highly subjective as it is shaped by perceptions of researchers (Bryman and Bell, 2015). As such, the researcher interacts with objects under investigation as it is impracticable to disconnect existence in the social world from the thoughts of the researcher (Collis and Hussey, 2014). Thus, the act of researchers investigating social reality influences it. In this regard, interpretivists seek to explore complexity of social phenomena to generate interpretive understanding (Williams, 2016). As a result of this, researchers adopt series of methods to describe, translate and find the meaning of social phenomena. Consequently, this study argues in line with Corbin and Strauss (2015) that any research which does not include the use of statistical analysis of quantitative data ascribes to interpretivism paradigm. In line with the ongoing, the research outcome of interpretivism research is derived from qualitative methods of analysis, based on interpretation of qualitative data.

Following the philosophical assumptions of this study as already justified, this study complementarily ascribed to the distinctive features of positivism epistemological assumptions. Arguably, the use of positivism paradigm for this study provided the researcher with knowledge about social reality which is distant from the researcher. This further helped the researcher to take an objective view about the phenomena under investigation, while maintaining other applicable underlying philosophical assumptions. Clearly, the philosophical assumptions of this study swerve away from interpretivism research paradigm and has been deemed incongruous for this study.

### **3.4 Research Approach**

In research, the involvement of theory is essential which may or may not be explicit in the research design of a study. However, the theory is usually explicit during presentation of findings and conclusion (Creswell and Crewell, 2018). As such, the extent at which researchers possess clarity about relevant theory at the commencement of research is portrayed by two approaches of reasoning: deductive or inductive approach (Saunders, Lewis and Thornhill, 2018).

Deductive research approach adopts a clear conceptual and theoretical stance which the researcher will examine empirically through collection of data (Bryman and Bell, 2015), and involves seeking for causal relationships among concepts or variables (Wilson, 2014; Williams, 2016). As such, specific instances are deduced from general inferences; hence, deductive approach is regarded as moving from the general to specific (Collis and Hussey, 2014). According to Blaikie (2010), the sequential steps in deductive research are outlined henceforth.

- Suggest a tentative idea, hypothesis, set of hypotheses or premise to form a theory
- Deduce testable proposition(s) using existing literature to specify conditions under which the theory is expected to prevail.
- Examine and compare suggested premises and its argument with existing theories to check if advance understanding is derived. If no, modify suggested premises; if yes, then continue to next stage.
- Test premises through collection of relevant data which measures the variables or concepts, and further analyse the results.
- Compare results of analysis with premises to confirm or modify existing theories.

On the other hand, inductive research approach explores a topic and develops a theoretical explanation through observation of social reality. In this regard, general inferences are induced from specific situations; thus, inductive research is regarded as moving from specific to general (Collis and Hussey, 2014).

Based on the underlying philosophical assumptions and justified research paradigm, this study complementarily ascribed to deductive research as it examines causal relationship between sectoral bank lending and economic growth in Nigeria. In this regard, a statement of hypothesis was formulated in the first chapter of this thesis to express the relationship between the two variables in relation to existing theory. Additionally, the formulated statement of hypothesis was tested empirically to either accept or modify existing theory. This was done by the researcher through taking a decision on the null and alternate hypotheses based on the research outcome. Clearly, the philosophical assumptions and justified research paradigm of this study



did not ascribe to features of an inductive research. Hence, the research approach was deemed unsuitable for this study.

### **3.5 Research Design**

Research design refers to the choices researchers make regarding the methodology and methods required to address identified research question(s) (Bryman and Bell, 2015). According to Collis and Hussey (2014), justifying the methodology and methods choices in a positivist paradigm requires less energy in comparison to interpretivist paradigm. This assertion can be attributable to the existence of logical reasoning guiding positivist studies which does not apply in interpretivist studies. In research, there are three types of research design: quantitative, qualitative and mixed method. A mixed method research design can be intra-method (qualitative + qualitative or quantitative + quantitative) or inter-method (qualitative + quantitative).

In line with the philosophical assumptions and research paradigm embedded in this study, the research design for this study is distinctly quantitative as it focuses on examining relationships between variables (sectoral bank lending and economic growth in Nigeria). Furthermore, this study used a single data collection technique with a matching quantitative analytical process; hence, the applicable research design for this study is mono-method quantitative design. Thus, the use of qualitative or mixed-method research design did not correspond with the underlying philosophical assumptions and research paradigm.

### **3.6 Research Strategy**

The view of Robson and McCartan (2016) regards research strategy as a plan of how researchers will answer identified research question(s) in a study. As such, research strategy provides a methodological link between philosophy and ensuing data collection and analysis methods (Denzin and Lincoln, 2018). According to Saunders, Lewis and Thornhill (2018), there are eight (8) research strategies based on the research design of study: experimental and survey strategies which are exclusively related to quantitative research design; archival and case study strategies which are associated with qualitative, quantitative or mixed design; while ethnography, action research, grounded theory and narrative inquiry are related to qualitative research design.



In line with this, the view of Denzin and Lincoln (2018) asserts that a choice among qualitative research strategies tends to generate huge uncertainty due to diversity of qualitative strategies. However, a choice among the strategies is much clearer for quantitative research design. Following the philosophical assumptions and research paradigm embedded in this study, the research strategy adopted in this study is experimental strategy. According to Saunders, Lewis and Thornhill (2018), the purpose of an experimental research strategy is to examine how a change in an independent variable causes a change in a dependent variable using a formulated hypothesis. As such, this aligned with the aim of this research which is to examine causal relationship between sectoral bank lending and economic growth, through testing formulated hypotheses.

### **3.7 Time Horizon**

The view of Saunders, Lewis and Thornhill (2019) postulates that determining a suitable time horizon for a research is instigated by the research question(s). As such, time horizon could be cross-sectional or longitudinal. For cross-sectional studies, it is usually used for survey research and conducted when there are limited resources or time constraint (Collis and Hussey, 2014; Bryman and Bell, 2015). Cross-sectional studies provide a snapshot of phenomena at a specific time. On the other hand, longitudinal studies are often related with positivism and involve examining group of subjects or variables over a long period of time. In this regard, a major strength of a longitudinal research is the ability to study development and change among variables over the period of time; a technique regarded as time series analysis (Collis and Hussey, 2014).

In line with the aim of this research, the time horizon for this study is associated with longitudinal time horizon as the study investigates causal relationship between sectoral bank lending and economic growth in Nigeria using annual data from 1960 to 2017. The justification for commencing in 1960 is the year of Nigerian independence, and the country has been solely responsible for its own economic affairs since independence. As such, this study used time series analysis to achieve the research aim. Clearly, the nature of this study does not conform to cross-sectional time horizon.

### 3.8 Data Collection

In a research process, the stage of data collection is usually regarded as research tactics (Saunders, Lewis and Thornhill, 2019). As such, Dudovskiy (2017) accentuates that data collection is the process where researchers collect the required information relating to phenomena with the aim of providing answer to the identified research question(s). The views of Olsen (2012) and Hair et al. (2015) affirm that the data obtained by researchers must be utilised originally or the study should offer a stimulating and inventive interpretation of existing data. Furthermore, Olsen (2012) argues that researchers should ensure data collected for a study is effectively used to support initiation of solid arguments because the collected data is neither important nor adequate on its own.

In line with the ongoing, data can be obtained by researchers from primary or secondary sources based on the underlying philosophical assumptions of the researcher. Primary data are the data collected from the first-hand experience of the researcher, through interaction with social reality or phenomena. As such, primary data are mainly obtained through administration of questionnaires, direct observation and conduct of interviews (Wilson, 2014; Bryman and Bell, 2015; Creswell and Creswell, 2018).

On the other hand, secondary data are collected for other purposes other than that which they were originally collected. Hence, secondary data are collected from external sources which do not require involvement of the researcher with social reality. As such, secondary data can be obtained from sources such as: financial databases, financial reports, internet, magazines, newspapers, and other sources. Once collected, secondary data can be further analysed to generate different or additional knowledge, understanding or conclusions (Robson and McCartan, 2016; Silverman, 2017).

Following the philosophical assumptions, paradigm and time horizon of this study, this study collected secondary data in order to achieve the research aim. According to Saunders, Lewis and Thornhill (2018), the specific type of secondary data relevant for this study is longitudinal raw data as it is applicable for studies based on time series analysis. In this regard, the secondary data for this study was collected from Central Bank of Nigeria statistical bulletins and World Bank database. Hence, the use of primary was not suitable for the nature of this study. For this study, the data for bank lending to sectors of the Nigerian economy were obtained from CBN statistical

bulletins 2011 and 2016; while data for labour, human capital and gross capital formation were obtained from the World Bank Statistical database.

The advantages of using secondary data in this study include: it makes longitudinal studies like this study feasible as data can be collected over a period of time, it possesses fewer resource constraints, offers better understanding into unforeseen discoveries, and such data provides unobtrusive measure (Saunders, Lewis and Thornhill, 2018). On the other hand, use of secondary data may sometimes be difficult or costly to access and there is no real control over quality of data as they can be associated with inaccuracies and inconsistencies.

### **3.9 Data Analysis**

According to DeVaus (2014) and Easterby-Smith et al. (2018), the process of data analysis is required after collection of data in order to provide the researcher with a basis for conclusion or generating a solid argument through deriving momentous meaning from data collected. For qualitative studies, the objective of data analysis is to identify, investigate, compare and interpret themes and patterns with the aim of generating theories and ideas (Silverman, 2017; Mason, 2018). In this regard, a generic data analysis approach for qualitative studies is thematic analysis (Ritchie et al., 2014; Bryman, 2016) as it involves the researcher seeking to identify common patterns and themes as they work through transcripts or other artifacts (Hair et al., 2015). The view of Hair et al. (2015) further affirms that data collection and analysis are usually affiliated in qualitative research, with analysis instigating additional collection of data, which in turn encourages more analysis. Hence, in qualitative research data collection, analysis and development of theory are intertwined (Hair et al., 2015).

In the case of quantitative research such as this study, numerical data or information can be quantified in order to enable the researcher answer the research questions (Robson and McCartan, 2016). As such, quantitative data analysis is usually associated with researchers finding evidence to either support or reject identified hypotheses which have been formulated at the beginning stages of the research process (Creswell and Crewell, 2018). Hence, quantitative data analysis involves the use of simple tables and graphs which show frequency of occurrence (Wilson, 2014; Saunders, Lewis and Thornhill, 2018). It also involves the use of statistics such as indices to enhance comparisons, by establishing statistical relationships among

variables to use of complex statistical modelling (Saunders, Lewis and Thornhill, 2018; Easterby-Smith et al., 2018).

Be that as it may, this study is quantitative in nature as it examines cause and effect among sectoral bank lending and economic growth in Nigeria. As such, the tested hypotheses have been formulated in the first chapter of this thesis and the empirical models investigated are outlined in section 3.9 of this chapter. Thus, the secondary data collected for this study was analysed through statistical analysis using stata software. The justification for this selection is that statistical analysis allows researchers to investigate causal relationship between variables. In this regard, use of simple table and graphs to show frequency of occurrence was deemed inappropriate to achieve the aim of this research. In line with this, the use of statistical analysis to examine causal relationship between the variables under investigation also supports the ontological and epistemological assumptions of this study as earlier justified.

### 3.10 Empirical Models of the Study

Existing studies such as Vaithilingam, Guru and Shanmugam (2003), Lu and Shen (2012), Mamman and Hashim (2014), Xu (2016), Alexiou, Vogiazas and Nellis (2018), Fu, Lin and Molyneux (2018) investigating the influence of bank lending on economic growth lack suitable theoretical framework. Instead, such studies formulated general regression models in the form:

$$\text{Economic Growth} = f(\text{Bank Lending}) \quad (3.1)$$

This postulation supports the view of Odedokun (1996) which highlights that, studies which have empirically investigated the role of finance on economic growth lack standard theoretical underpinnings. For instance, Stengos (2005), Ndako (2010), Hassan, Sanchez and Yu (2011), McCaig and, Mahran (2012), Ogbonna et al. (2013), Adu, Marbuah and Mensah (2013), Oriavwote and Eshenake (2014), Ngouhouo and Moutie (2015), Modebe and Ezeaku (2016), Akpan, Nwosu and Eweke (2017) have used regression models in the form:

$$\text{Economic Growth} = f(\text{Financial Development}) \quad (3.2)$$

Hence, a framework based on conventional neo-classical growth model related to Solow model was proposed by Odedokun (1996) using a one-sector aggregate production function as expressed in equation 3.3:

$$Y_t = f(L_t, K_t, F_t, Z_t) \quad (3.3)$$

where Y is real Gross Domestic Product (GDP) or aggregate output, L is labour force, K is capital stock, F is the degree of financial development, Z is the vector of other possible factor inputs relevant to aggregate production process, and subscript t is time period. According to Liang and Reichert (2012), the model expressed in equation 5.3 enhances researchers to reduce the likelihood of excluding essential variables and expand the precise explanation of financial sector development. Hence, the differential and suitable manipulation of equation 3.3 is expressed in equation 5.4 which is an interpretation of the conventional neo-classical model of economic growth:

$$gY_t = agL_t + b\left(\frac{I}{Y}\right)_t + cgF_t + dgZ_t \quad (3.4)$$

where gY, gL, gF and gZ is growth in real GDP, growth in labour force, growth in level of level of financial development and growth in vector of other input factors respectively. Additionally, (I/Y) is share of real gross investment in real GDP; a, b and c are constant parameters and d is vectors of parameters. Following the study of Odedokun (1991) which builds on the studies of Feder (1983) and Ram (1987) by revealing positive significant impact of growth in exports on economic growth, Odedokun (1996) integrates growth in exports as the lone element of vector Z in equation 3.4 to form equation 3.5 below:

$$gY_t = b_0 + b_1 gL_t + b_2 \left(\frac{I}{Y}\right)_t + b_3 gF_t + b_4 gX_t + \mu_t \quad (3.5)$$

The neo-classical model of Odedokun (1996) in equation 4.5 above has been adopted and improved in studies such as Odedokun (1997), Odedokun (1998), Jalilian and Odedokun (2000), Hao (2006), and Liang and Reichert (2012) to examine the impact of financial sector on economic growth in different countries. In order to contribute to existing knowledge, this study supports the assertion of Odedokun (1996) that studies on finance and economic growth should embrace standard theoretical underpinnings in empirical models.

However, this study argues that the empirical model of Odedokun (1996) specified in equation 3.5 is over-parameterised for this study and fails to recognise the importance of endogenous theory of economic growth to complement exogenous growth theory. As such, the modified empirical model for this study integrates endogenous growth theory of Romer (1986) and Lucas (1988), and exogenous growth theory of Solow (1956) and Swan (1956) with sectoral bank lending in Nigeria. In this regard, this study follows existing studies such as: Patterson and Patterson (2012), Sulaiman et al (2015), Dutta and Sobel (2018), Chang, et al., (2018), Hasyiyati and Sahara (2020); and Maneejuk and Yamaka (2021), to consider using tertiary enrolment as a proxy for human capital. The justification for this is that primary and secondary enrolment rates represent imitation of technology and contribute to productivity of workers, while tertiary enrolment supports enhancement of R&D and technological progress (Bayraktar-Saglam, 2016).

Furthermore, Bils and Klenow (2000) and Sianesi and Van Reenen (2003) argue that presence of omitted variables in empirical models has led to conflicting evidence on relationship between human capital and economic growth. Building on this argument, the view of Glewwe, Maiga and Zheng (2014) postulates that analysis of human capital on economic growth should include physical capital formation, since omission of such variable could yield bias results. As such, this study integrates both physical capital formation and human capital in the empirical models for this study in order to obtain less biased and more reliable results. The consideration for using share of real gross investment in real GDP as proxy for physical capital formation follows the studies of Rani and Kumar (2019), Aslan and Altinoz (2020), Oyebowale and Algarhi (2020), Khan (2020), Yasmeen et al. (2021), among others.

Additionally, this study opposes the use of population growth as a widely used proxy for labour in studies such as Odedokun (1996), Jalilian and Odedokun (2000), Hao (2006), and Liang and Reichert (2012) among others. As such, this study argues that population growth is an unsuitable proxy for labour as it includes children and retired individuals who are not actively involved in the production of goods and services. Thus, this study adopts the use of labour force participation rate for ages 15-24 as a proxy for labour force, which is in line with the studies of Gustavsson and Osterholm (2012), Rami (2018), and Grigoli, Koczan and Tapalova (2018). The justification for adopting this proxy for labour is to capture the impact of Nigerian youth on economic growth in Nigeria.

According to UNESCO (2017), people between the ages of 15 and 24 years comprises the 'youth' within an economy. Additionally, Nigeria has one of the prevalent youth population in the world (World Bank, 2017). Hence, adopting labour force participation rate for ages 15-24 as a proxy for labour in Nigeria is imperative to the study under investigation rather than population growth. Furthermore, in the light of the above arguments, the aggregated empirical model for this study modifies the empirical model of Odedokun (1996) in equation 3.5 to form equation 3.6 below.

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gSEC_t + \mu_t \quad (3.6)$$

where:  $gY$  is growth in real GDP,  $gL$  is growth in labour represented by labour force participation rate for ages 15-24 (national estimate),  $gK$  is growth in share of real gross investment in real GDP (now regarded as Gross Capital Formation-GCF),  $gH$  is growth in human capital represented by tertiary school enrolment (% gross),  $gSEC$  is growth in bank lending to economic sectors,  $b_0$  is the intercept,  $b_1$  to  $b_4$  is the slope of coefficient of regressors,  $\mu$  is error term and  $t$  is the time period.  $gSEC$  represents aggregated data, which follows similar approach to the studies of Gomes and Issler (2017), Huntington-Klein (2017), and Kvamsdal (2019).

Based on equation 3.6, the aggregated model based on the sectors of Nigerian economy as shown in Figure 4.11 (page 144) is expressed in equation 3.7 as:

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gPRO_t + b_4 gGNC_t + b_4 gSVC_t + b_4 gOTS_t + \mu_t \quad (3.7)$$

where:  $gPRO$  is growth in aggregate bank lending to production sector,  $gGNC$  is growth in aggregate bank lending to general commerce sector,  $gSVC$  is growth in aggregate bank lending to services sector and  $gOTS$  is growth in aggregate bank lending to 'others' sector.

Furthermore, the empirical model for this study as shown in equation 3.7 will be disaggregated into different sub-sectors of the Nigerian economy. Hence, this study follows existing studies which adopted disaggregated data, such as Yaman (2019); Odhiambo (2020); Karaki (2020); Apaitan, Disyatat and Manopimoke (2020). As shown in Figure 4.11 (page 141), the Nigerian economy consists of four major sectors with different subsectors. As such, this study formulates and examines four different empirical models to capture the influence of each sectoral lending on economic growth in Nigeria as expressed in equations 3.8 to 3.11 as follows:

### Production sector model (Model A)

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gAFF_t + b_5 gMAN_t + b_6 gMAQ_t + b_7 gREC_t + \mu_t \quad (3.8)$$

where:  $gY$  is growth in real GDP,  $gL$  is growth in labour represented by labour force participation rate for ages 15-24 (national estimate),  $gK$  is growth in share of real gross investment in real GDP (now regarded as Gross Capital Formation-GCF),  $gH$  is growth in human capital represented by tertiary school enrolment (% gross),  $gAFF$  is growth in bank lending to Agriculture, Forestry and Fishery sub-sector,  $gMAN$  is growth in bank lending to Manufacturing sub-sector,  $gMAQ$  is growth in bank lending to Mining and Quarrying sub-sector,  $gREC$  is growth in bank lending to Real Estate and Construction sub-sector,  $b_0$  is the intercept,  $b_1$  to  $b_7$  is the slope of coefficient of regressors,  $\mu$  is error term and  $t$  is the time period.

### General Commerce sector model (Model B)

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gBDS_t + b_5 gDMT_t + b_6 gEXP_t + b_7 gIMP_t + \mu_t \quad (3.9)$$

where:  $gY$ ,  $gL$ ,  $gK$  and  $gH$  remain as defined in equation 3.7,  $gBDS$  is growth in bank lending to Bills Discounted sub-sector,  $gDMT$  is growth in bank lending to Domestic Trade sub-sector,  $gEXP$  is growth in bank lending to Exports sub-sector,  $gIMP$  is growth in bank lending to Imports sub-sector,  $b_0$  is the intercept,  $b_1$  to  $b_7$  is the slope of coefficient of regressors,  $\mu$  is error term and  $t$  is the time period.

### Services sector model (Model C)

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gPUT_t + b_5 gTRC_t + b_6 gCFI_t + \mu_t \quad (3.10)$$

where:  $gY$ ,  $gL$ ,  $gK$  and  $gH$  remain as defined in equation 5.7,  $gPUT$  is growth in bank lending to Public Utilities sub-sector,  $gTRC$  is growth in bank lending to Transport and Communication sub-sector,  $gCFI$  is growth in bank lending to Credit to Financial Institutions sub-sector,  $b_0$  is the intercept,  $b_1$  to  $b_6$  is the slope of coefficient of regressors,  $\mu$  is error term and  $t$  is the time period.

### 'Others' sector model (Model D)

$$gY_t = b_0 + b_1 gL_t + b_2 gK_t + b_3 gH_t + b_4 gGOV_t + b_5 gPPF_t + b_6 gMIS_t + \mu_t \quad (3.11)$$



where:  $gY$ ,  $gL$ ,  $gK$  and  $gH$  remain as defined in equation 3.7,  $gGOV$  is growth in bank lending to Government sub-sector,  $gPPF$  is growth in bank lending to Personal and Professional sub-sector,  $gMIS$  is growth in bank lending to Miscellaneous sub-sector,  $b_0$  is the intercept,  $b_1$  to  $b_6$  is the slope of coefficient of regressors,  $\mu$  is error term and  $t$  is the time period.

### 3.11 Steps in Data Analysis

#### 3.11.1 Unit Root Tests

In econometrics, broad variety of economic time series is characterised by trending performance which raises an essential question about statistical modelling of variables in the long run (Wolters and Hassler, 2006). As such, since the seminal literature of Nelson and Plosser (1982), economists are aware that modelling the long-run behaviour of variables by trend or difference has significant consequences for economic interpretation. According to conventional econometrics, stationary variables are assumed in time series which is one of the reasons non-stationary variables are transformed into stationary time series (Wolters and Hassler, 2006). In this regard, Wolters and Hassler (2006) further highlights that transforming of variables can be done in two methods: removing deterministic trend in case of a trend stationary model or taking first difference of variables in case of difference stationary model.

Testing for non-stationarity in a regression model is essential for the following reasons: non-stationary series possess infinite persistent shocks, to prevent spurious regressions and to prevent invalid standard assumptions for asymptotic analysis. In this regard, the analysis of non-stationary variables in time series requires careful examination of the trending behaviour. Famous formal test to investigate unit root test is developed by Dickey and Fuller (1979) using *tau statistic* based on Monte Carlo simulations, known as Dickey-Fuller (DF) test. Afterwards, the study of Said and Dickey (1984) augment the basic autoregressive DF unit root test by adding lagged values of the dependent variable. Thus, the unit root test of Said and Dickey (1984) is regarded as Augmented Dickey-Fuller (ADF) test which is based on estimating the test regression in equation 3.12.

$$\Delta y_t = \beta' D_t + \phi y_{t-1} + \sum_{j=1}^p \phi_j \Delta y_{t-j} + \varepsilon_t \quad (3.12)$$

where  $D_t$  is a vector of deterministic terms,  $\Delta y_{t-j}$  is the lagged difference terms,  $\varepsilon_t$  is the error term, the value of  $p$  is set to make the error term serially correlated unlike the DF test where the error term is assumed to be uncorrelated. The ADF test is based under the null hypothesis that  $\phi = 0$ , meaning that the time series under consideration has a unit root or is non-stationary. The alternative hypothesis is that  $\phi < 0$ ; that is, the time series is stationary. Thus, if the null hypothesis is rejected, then, the time series is stationary.

To support the output of ADF unit root test, this study further conducted the Phillips-Perron (PP) test developed by Phillips and Perron (1988). According to Dickey and Fuller (1979), the DF test assumes that error terms are identically and independently distributed. The ADF test provides an adjustment to the DF test by addressing potential serial correlation in the error terms by adding lagged difference terms of the dependent variable (Said and Dickey, 1984). However, the PP test use non-parametric statistical methods to address possible serial correlation and heteroskedasticity in the error terms without adding lagged difference terms. Removing the lagged difference terms from equation 3.13, the test regression for the PP test is specified as:

$$\Delta y_t = \beta' D_t + \phi y_{t-1} + \varepsilon_t \quad (3.13)$$

In the PP test, the test statistics are directly modified to form  $Z_t$  and  $Z_\pi$  statistics, which both have the same normalised bias statistics and asymptotic distributions as the ADF t-statistic. As such, the PP test is based under the null hypothesis that  $\phi = 0$ , meaning that the time series under consideration has a unit root or is non-stationary. The alternative hypothesis is that  $\phi < 0$ ; that is, the time series is stationary. Thus, if the null hypothesis is rejected, then, the time series is stationary.

Based on the above discussions, the ADF and PP unit root tests were conducted based on 'constant only' as the time series graphs do not show any evidence of deterministic linear time trend (consistent increase or decrease) or stochastic trends (inconsistent increase or decrease) (see appendix D). For specification of lag length ( $p$ ), in the implementation of ADF unit root test, this study followed the rule of thumb suggested by Schwert (1989) for determining maximum lag length, defined as in equation 3.14.

$$p_{\max} = \left[ 12 \cdot \left( \frac{T}{100} \right)^{1/4} \right] \quad (3.14)$$

where  $T$  in the case of this study is 57 (1961 to 2017), substituting the value of  $T$  into the formula of Schwert (1989),  $p_{\max} = 1.6$ . Hence, following the work of Schwert (1989), this study considered maximum lag length ( $p_{\max}$ ) of '2' in the implementation of ADF unit root test.

### 3.11.2 Test for Cointegration or Long-run Relationship

Over the past decade, two main approaches to examine cointegration have gained considerable attention of scholars in empirical economics: the two-step residual-based approach of Engle and Granger (1987), Phillips and Ouliaris (1990) and system-based reduced rank approach of Johansen (1991). As such, these approaches concentrate on situations where underlying variables are integrated of order one or  $I(1)$ . Hence, a newly test of cointegration was initially proposed in the study of Pesaran and Shin (1999) and further extended in Pesaran, Shin and Smith (2001).

In this regard, the approach of Pesaran, Shin and Smith (2001) is applicable to test cointegration irrespective the order of integration among underlying regressors: purely  $I(0)$ , purely  $I(1)$  or mutually cointegrated, but not  $I(2)$  to ensure its validity. Thus, Pesaran, Shin and Smith (2001) proposes an autoregressive distributed lag (ARDL) bound testing procedure to provide asymptotic critical value bounds for regressors, which assumes that all regressors are purely  $I(1)$  or upper bound on the one hand, and purely  $I(0)$  or lower bound on the other hand.

Consequently, there are several advantages of ARDL bounds testing approach over other cointegration approaches. As earlier identified, the obvious advantage is that, ARDL approach does not impose restrictive assumption that variables under investigation must be integrated of the same order. However, a limitation of the ARDL model is that it is not suitable for a model with  $I(2)$  variables to ensure its validity, as the test is suitable for models with  $I(0)$ ,  $I(1)$  or mix of  $I(0)$  and  $I(1)$  variables. Hence, the need for unit root tests as earlier considered is to ensure there are no  $I(2)$  variables in the model to make the bounds testing valid.

Additionally, conventional methods estimate long-run relationship between variables within a system of equations, ARDL approach employs only a single reduced equation (Pesaran, Shin and Smith, 2001). Hence, the study of Nkoro and Uko (2016) asserts that ARDL reduces problem of endogeneity since all variables are assumed to be endogenous. Additionally, while other cointegration approaches exhibit sensitivity to size of the sample, ARDL approach is suitable to investigate small sample size. Thus, the unrestricted error correction (EC) regressions used to examine long-run relationship between the variables in equation 3.15 for aggregated sectors, and equations 3.16 to 3.19 for disaggregated sectors using  $gY$  as a dependent variable are specified thus:

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gPRO_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gGNC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gSVC_{t-o} \\
& + \sum_{p=0}^t \alpha_8 \Delta gOTS_{t-p} + \beta_1 gY_{t-1} + \beta_2 gL_{t-1} + \beta_3 gK_{t-1} + \beta_4 gH_{t-1} \\
& + \beta_5 gPRO_{t-1} + \beta_6 gGNC_{t-1} + \beta_7 gSVC_{t-1} + \beta_8 gOTS_{t-1} + e_t
\end{aligned}
\tag{3.15}$$

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gAFF_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gMAN_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMAQ_{t-o} \\
& + \sum_{p=0}^t \alpha_8 \Delta gREC_{t-p} + \beta_1 gY_{t-1} + \beta_2 gL_{t-1} + \beta_3 gK_{t-1} + \beta_4 gH_{t-1} \\
& + \beta_5 gAFF_{t-1} + \beta_6 gMAN_{t-1} + \beta_7 gMAQ_{t-1} + \beta_8 gREC_{t-1} + e_t
\end{aligned}
\tag{3.16}$$

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gBDS_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gDMT_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gEXP_{t-o} \\
& + \sum_{p=0}^t \alpha_8 \Delta gIMP_{t-p} + \beta_1 gY_{t-1} + \beta_2 gL_{t-1} + \beta_3 gK_{t-1} + \beta_4 gH_{t-1} \\
& + \beta_5 gBDS_{t-1} + \beta_6 gDMT_{t-1} + \beta_7 gEXP_{t-1} + \beta_8 gIMP_{t-1} + e_t
\end{aligned}
\tag{3.17}$$

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gPUT_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gTRC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gCFI_{t-o} \\
& + \beta_1 gY_{t-1} + \beta_2 gL_{t-1} + \beta_3 gK_{t-1} + \beta_4 gH_{t-1} + \beta_5 gPUT_{t-1} \\
& + \beta_6 gTRC_{t-1} + \beta_7 gCFI_{t-1} + e_t
\end{aligned}
\tag{3.18}$$

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gGOV_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gPPF_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMIS_{t-o} \\
& + \beta_1 gY_{t-1} + \beta_2 gL_{t-1} + \beta_3 gK_{t-1} + \beta_4 gH_{t-1} + \beta_5 gGOV_{t-1} \\
& + \beta_6 gPPF_{t-1} + \beta_7 gMIS_{t-1} + e_t
\end{aligned}
\tag{3.19}$$

where the dependent and independent variables remain as earlier defined; the symbol  $\Delta$  is the first difference operator; the parameters  $\alpha_s$  where  $s = 1, 2, \dots, 8$  are short-run coefficients;  $\beta_r$  where  $r = 1, 2, \dots, 8$  are long-run coefficients;  $e_t$  is the error term;  $m, n, o, p, q, r, s$  and  $t$  are number of lags. The appropriate lag length is determined using Akaike information criterion (AIC). In the bounds testing approach, the  $F$  tests are used to determine existence of long-run relationships.

On the one hand, the null hypothesis of no cointegration or long-run relationship for equations 3.15 (aggregated sectors), 3.16 (production sector), and 3.17 (general commerce sector) is specified as:  $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$  against the alternative of cointegration or long-run relationship specified as:  $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq 0$ .

The  $F$  tests for equations 3.15 to 3.17 using  $gY$  as a dependent variable can also be denoted as:

$$F_{gY} (gY|gL, gK, gH, gPRO, gGNC, gSVC, gOTS);$$

$$F_{gY} (gY|gL, gK, gH, gAFF, gMAN, gMAQ, gREC);$$

$$F_{gY} (gY|gL, gK, gH, gBDS, gDMT, gEXP, gIMP);$$

On the other hand, null hypothesis of no cointegration or long-run relationship for equations 3.18 (services sector) and 3.19 (others) is specified as:  $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$  against the alternative of cointegration or long-run relationship specified as:  $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq 0$ .

The  $F$  tests for equations 3.18 and 3.19 using  $gY$  as a dependent variable can also be denoted as:

$$F_{gY} (gY|gL, gK, gH, gPUT, gTRC, gCFI);$$

$$F_{gY} (gY|gL, gK, gH, gGOV, gPPF, gMIS).$$

Under the influence of the seminal contribution of Pesaran, Shin and Smith (2001), this study adopted the bounds testing approach to test for cointegration or long-run relationship between the variables under investigation. The  $F$ -test comprises of a non-standard distribution based on three conditions: the number of regressors in the ARDL model; whether the variables in the ARDL model are  $I(0)$  or  $I(1)$ ; and whether the ARDL model contains an intercept and/or a trend. Pesaran, Shin and Smith (2001)

provides five (5) cases to specify deterministic components: case I (no intercepts; no trends), case II (restricted intercepts; no trends), case III (unrestricted intercepts; no trends), case IV (unrestricted intercepts; restricted trends) and case V (unrestricted intercepts; unrestricted trends).

According to Pesaran, Shin and Smith (2001), selection of cases follows a similar pattern to unit root testing. Thus, cases III and IV ignore the constraints linking the intercept and trend coefficient to the parameter vector, while cases II and IV fully incorporate the constraints. Based on the time series graphs in appendix D and justification in sub-section 3.11.1, this study focused on case III to ignore the constraints linking the intercept and trend to the parameter vector. The  $F$ -test values are further compared against critical values to determine existence of cointegration or long-run relationship. The critical values for the bounds testing approach are generated by Pesaran and Pesaran (1997) and Pesaran, Shin and Smith (2001) for samples sizes of 500 and 1,000 observations, with 20,000 and 40,000 replications, respectively. Hence, the bounds  $F$ -statistic critical values of Pesaran and Pesaran (1997) and Pesaran, Shin and Smith (2001) are suitable for large number of observations, which is not appropriate for this study.

In the light of this, a later study of Narayan (2004) generates critical values for sample sizes of 30 to 80 observations, which were 17.1% higher than critical values reported in Pesaran and Pesaran (1997) and 35.5% higher than those reported in Pesaran, Shin and Smith (2001). The critical values in Narayan (2004) was later extended in Narayan (2005). On the one hand, Narayan (2004) generates critical values for only two cases: restricted intercept and no trend, and restricted intercept and trend. On the other hand, Narayan (2005) generates critical values for cases II to V, as identified in Pesaran, Shin and Smith (2001). Thus, the critical values of Narayan (2005) were used for this study with 57 observations, rather than the critical values of Pesaran, Shin and Smith (2001). Additionally, Pesaran, Shin and Smith (2001) provides critical values for 1%, 2.5%, 5% and 10% significance levels, while Narayan (2004; 2005) focus on 1%, 5% and 10% significance levels. For this study, the  $F$ -test values were compared with the lower bound critical values of Narayan (2005) as the variables are purely  $I(0)$  (see appendix Q).

As such, if the  $F$  statistic values fall outside the lower critical values bound of Narayan (2005), a conclusive decision can be made without knowing the cointegration rank of the process. On the other hand, if the  $F$  statistic values fall within the lower critical values bound of Narayan (2005), the inference would be inconclusive, which further requires knowledge of the cointegration rank. Thus, we fail to reject the null hypothesis of no cointegration or long-run relationship if the  $F$ -statistic values are less than the  $I(0)$  critical values.

Using critical values of Narayan (2005), the bounds testing results in this study show evidence of long-run relationship among the variables for aggregated sectors, production sector, services sector and 'others' sector models. Hence, the long-run and short-run elasticities for aggregated sectors and production sector were derived using the ARDL ( $m, n, o, p, q, r, s, t$ ) models (see equations 3.20 and 3.21), while ARDL ( $m, n, o, p, q, r, s$ ) models were used to derive long-run and short-run elasticities for services sector and 'others' sector (see equations 3.22 and 3.23). The ARDL error correction models (ECM) were specified appropriately based on differential lag lengths on the lagged variables thus:

$$\begin{aligned}\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gPRO_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gGNC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gSVC_{t-o} \\ & + \sum_{p=0}^t \alpha_8 \Delta gOTS_{t-p} + \lambda ECT_{t-1} + e_t\end{aligned}\tag{3.20}$$

$$\begin{aligned}\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gAFF_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gMAN_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMAQ_{t-o} \\ & + \sum_{p=0}^t \alpha_8 \Delta gREC_{t-p} + \lambda ECT_{t-1} + e_t\end{aligned}\tag{3.21}$$



$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gPUT_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gTRC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gCFI_{t-o} \\
& + \lambda ECT_{t-1} + e_t
\end{aligned}
\tag{3.22}$$

$$\begin{aligned}
\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\
& + \sum_{m=0}^q \alpha_5 \Delta gGOV_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gPPF_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMIS_{t-o} \\
& + \lambda ECT_{t-1} + e_t
\end{aligned}
\tag{3.23}$$

where dependent and independent variables remain as earlier defined; the symbol  $\Delta$  is the first difference operator;  $\beta_0$  is the intercept or constant; the parameters  $\alpha_s$  where  $s = 1, 2, \dots, 8$  are short-run coefficients;  $m, n, o, p, q, r, s$  and  $t$  are number of lags;  $\lambda$  is the parameter for speed of adjustment which measures the convergence of the variables towards long-run equilibrium;  $ECT_{t-1}$  is lagged error correction term and  $e_t$  is the error term.

On the other hand, the bounds testing results show no evidence of long-run relationship among variables in the general commerce sector model. Thus, this study considered estimating a vector autoregression model (VAR), developed by Sims (1980) to investigate relationship among variables in the model. According to Sims (1980), variables with true simultaneity should all be treated equally without any 'a priori' distinction between exogenous and endogenous variables. In a VAR model, the dependent variable is a function of its lagged value and lagged values of the regressors.

According to Gujarati and Porter (2010), all the variables in a VAR model should be jointly stationary. In situations where this is not the case, the data should be transformed appropriately (Gujarati and Porter, 2010). However, Harvey (1990) argues that VAR results from transformed data may be unsatisfactory. As such, the best approach to VAR is to work in levels or stationary variables (Harvey, 1990). In line with the argument of Harvey (1990), the use of VAR for general commerce sector is further justified. Thus, the VAR model using  $gY$  as a dependent variable is specified as:

$$\begin{aligned}
 gY_t = & \beta_0 + \sum_{i=1}^k \alpha_i gY_{t-i} + \sum_{j=1}^k \alpha_j gL_{t-j} + \sum_{l=1}^k \alpha_l gK_{t-l} + \sum_{m=1}^k \alpha_m gH_{t-m} \\
 & + \sum_{n=1}^k \alpha_n gBDS_{t-n} + \sum_{o=1}^k \alpha_o gDMT_{t-o} + \sum_{p=1}^k \alpha_p gEXP_{t-p} \\
 & + \sum_{q=1}^k \alpha_q gIMP_{t-q} + e_t
 \end{aligned}
 \tag{3.24}$$

where dependent and independent variables remain as earlier defined;  $\beta_0$  is the intercept or constant; parameters  $\alpha_s$  where  $s = i, j, l, m, n, o, p, q$  are short-run coefficients;  $k$  is the maximum lag length;  $e_t$  is the stochastic error terms, often regarded as impulses or shocks or innovations in the VAR language.

In order to run the VAR model, it is essential to decide the maximum lag length,  $k$  for the variables. The maximum lag was selected using the ‘varsoc’ command on stata which computes the likelihood ratio (LR) tests and four information criteria: final prediction error (FPE), Akaike’s information criterion (AIC), Schwarz’s Bayesian information criteria (SBIC), and the Hannan and Quinn information criterion (HQIC). According to Gujarati and Porter (2010), using too many lags in a VAR model will consume degrees of freedom and introduce possible multicollinearity problems, while few lags will yield specification error. Thus, Gujarati and Porter (2010) recommends the use of AIC or SBIC lag selection criterion in VAR models. In this line of reasoning, the AIC lag selection criterion was considered for the VAR model.

Following the justifications for adopting ARDL and VAR models where necessary, this study examined relationship among variables under investigation based on theories and existing literature. Hence, the null and alternative hypotheses for relationship are outlined as:

$H_0$  (Null Hypothesis): There is no positive and statistically significant relationship between sectoral bank lending and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a positive and statistically significant relationship between sectoral bank lending and economic growth in Nigeria.

### 3.11.3 Granger Causality Test

In addition to the ARDL and VAR models as applied where necessary to examine relationship, this study followed the common phrase in statistics that 'correlation does not imply causation' to provide further empirical evidence for this study. In this regard, this study further adopted Granger causality using Wald tests to determine the direction of causality between variables in both aggregated and disaggregated empirical models. Thus, this output aided the researcher to examine the existing four causality views between finance and growth.

The Granger causality tests provide answers to the questions: 'is it  $gY$  that causes each independent variable ( $x$ ) [ $gY \rightarrow x$ ] or each independent variable causes  $gY$  [ $x \rightarrow gY$ ]?' As such, the Granger causality test assumes that information pertinent to predict the variables is contained only in the time series data of the variables (Gujarati and Porter, 2010). The null and alternative hypotheses for causality are defined as:

$H_0$  (Null Hypothesis): There is no causality between sectoral bank lending and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a causality between sectoral bank lending and economic growth in Nigeria.

### 3.11.4 Residual Diagnostic Tests

According to Zeileis and Hothorn (2002), some pitfalls might affect the quality of conclusions which can be drawn from fitted regression models or lead to uninterpretable results. In response to this, variety of diagnostic tests have been developed in econometrics to address the identified problems in regression models. Consequently, this study conducted seven (7) diagnostics tests on the regression models to examine fitness and reliability, as explained hereafter.

#### 3.11.4.1 Normality Test

Following the work of Jarque and Bera (1987) using Lagrange multiplier (LM) method, Jarque-Bera test was conducted to examine the normality of the residuals in the regression models. The LM test statistic is given by:

$$LM = N [ (\sqrt{b_1})^2 / 6 + (b_2 - 3)^2 / 24 ] \quad (3.25)$$

where  $N$  is the number of observations,  $\sqrt{b_1}$  and  $b_2$  are skewness and kurtosis sample coefficients respectively. Thus, the null hypothesis of the Jarque-Bera test is that the residuals in the models are normally distributed, and the alternative hypothesis is that the residuals are not normally distributed. As such, the null hypothesis cannot be rejected if the p-value is greater than the appropriate significance level.

#### 3.11.4.2 Autocorrelation Tests

Durbin-Watson and Breusch-Godfrey Tests were conducted to test the null hypothesis that the residuals are not autocorrelated or do not possess serial correlation. The Durbin and Watson (1950) test is used to determine whether the error term in linear regression follows the AR(1) process written as:

$$u_t = \rho u_{t-1} + \epsilon_t \quad (3.26)$$

Generally, an AR(1) process requires  $\epsilon_t$  to be independent and identically distributed (i.i.d). However, the Durbin-Watson test requires  $\epsilon_t$  to be distributed  $N(0, \sigma^2)$  for the statistic to possess an exact distribution. The null hypothesis of the Durbin-Watson test is that there is no first-order autocorrelation, with  $d$  statistic values between 0 and 4, under the null that  $d$  is equal to 2, and the alternative hypothesis is that there is first-order autocorrelation. In this regard, values of  $d$  less than 2 suggest positive autocorrelation ( $\rho > 0$ ), values of  $d$  greater than 2 suggest negative autocorrelation ( $\rho < 0$ ). However, calculating the exact distribution is difficult, which led to the introduction of extended empirical lower ( $dL$ ) and upper ( $dU$ ) bounds based on sample size and number of regressors by Savin and White (1977).

As such, this study considered the Durbin-Watson statistic values at 5% significance points of the lower and upper bounds, in the work of Savin and White (1977) (see appendix R). Hence, we reject the null hypothesis of no first-order autocorrelation if  $d < dL$  and we fail to reject the null hypothesis if  $d > dU$ . Additionally, a value falling within the  $dL$  and  $dU$  range is inconclusive about whether to reject or fail to reject the null hypothesis.

This study further conducted Breusch-Godfrey test of Breusch (1978) and Godfrey (1978) for higher-order serial correlation in the residuals of the regression models. The Breusch-Godfrey test is an LM test of the null hypothesis of no serial correlation. As such, we reject the null hypothesis if the p-value is greater than 5% significance level and we fail to reject the null hypothesis if less than 5% significance level.

#### **3.11.4.3 Heteroskedasticity Tests**

Heteroskedasticity implies that the error terms in a regression model do not have constant variance (Gujarati and Porter, 2010). Additionally, this study examined heteroskedasticity in the residuals of the regression models using Cameron-Trivedi's information matrix (im) decomposition test and White test. Also, Breusch-Pagan heteroskedasticity Test was performed. In line with the study of Cameron and Trivedi (1990), the 'im' test and orthogonalized decomposition into heteroskedasticity, skewness and kurtosis tests were conducted for the regression models.

Additionally, the White's test option for homoskedasticity against unrestricted forms of heteroskedasticity was performed. The null hypothesis for the first term of the Cameron-Trivedi's decomposition test is usually similar to the White's test. The null hypothesis for the Cameron-Trivedi's and White's tests is that the variance of the error terms in the regression models are constant (homoskedastic), and alternative hypothesis is that the error terms are do not have not constant variance (heteroskedastic). As such, we reject the null hypothesis if the p-value is less than 5% significance level and we fail to reject the null hypothesis if greater than 5% significance level. Furthermore, the Breush-Pagan test was conducted to buttress the Cameron-Trivedi's and White's tests, with related null and alternative hypotheses, and decision rule.

#### **3.11.4.4 Model Misspecification Test**

This study examined functional form misspecification using 'Regression Specification Error Test' or RESET test of Ramsey (1969). In order to derive the test procedures, the classical least-squares residual vector is transformed to a sub-vector with more desirable properties for testing the null hypothesis. As such, the vectors  $\mathbf{q}_j; j = 1, 2, \dots$  are derived from the least-squares estimates of the dependent variable. Thus, the RESET examines the significance of a regression of the residuals on a linear function of  $\mathbf{q}_j; j = 1, 2, \dots$ . The null hypothesis of the RESET test is that the model has no omitted variables, while the alternative hypothesis is that the model has omitted variables. Thus, we reject the null hypothesis if the p-value is less than 5%

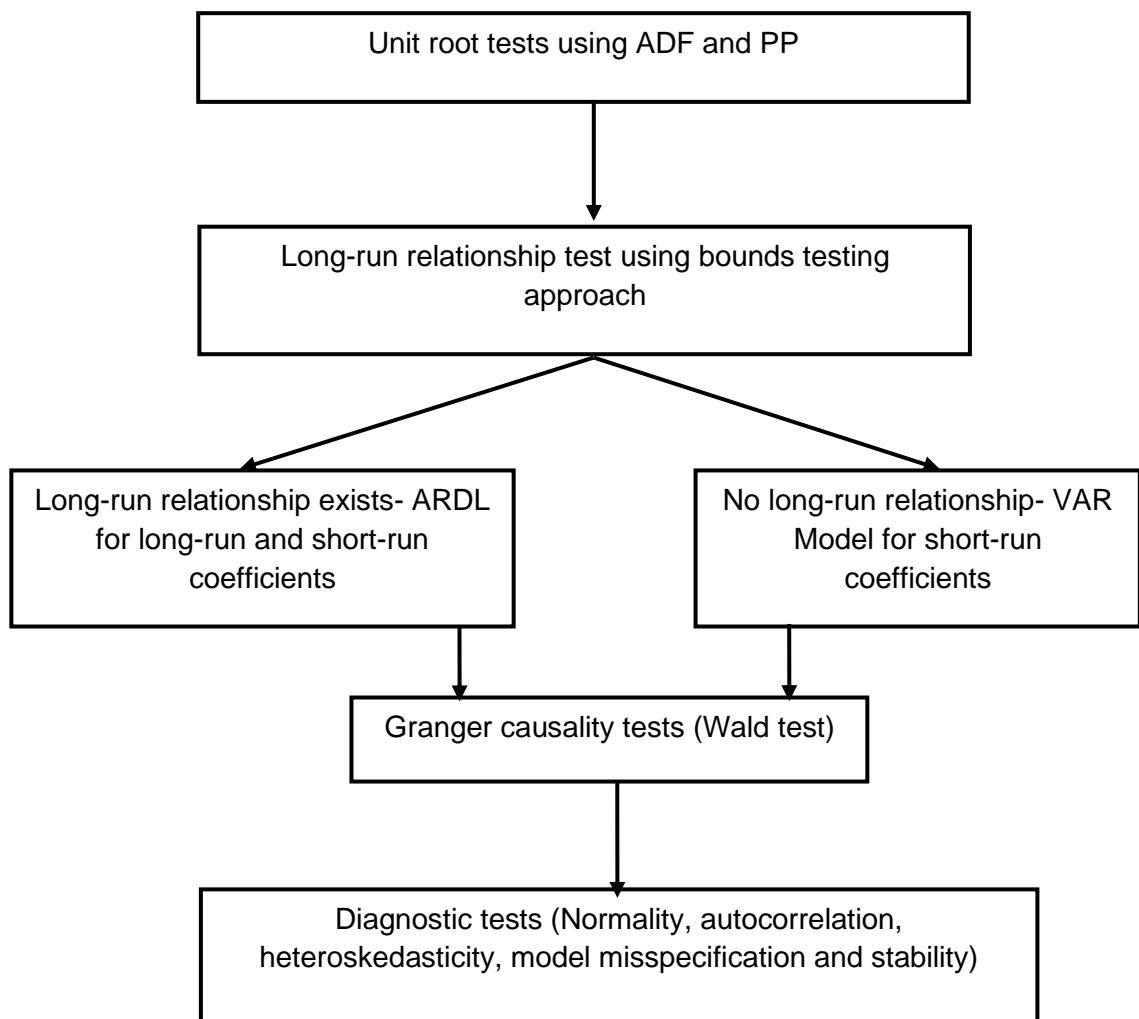
significance level and we fail to reject the null hypothesis if greater than 5% significance level.

#### **3.11.4.5 Model Stability Test**

The seminal study of Brown, Durbin and Evans (1975) developed two graphical techniques which are useful to detect departures from constancy in a regression analysis over time, when applied to time-series data. The two techniques are: plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ). In this regard, the study of Brown, Durbin and Evans (1975) argues that the graphical techniques are yardsticks for data interpretation rather than leading to hard and fast decisions. Hence, the graphical techniques do not examine whether the regression model is wrong, but they examine the gravity of irregularities in regression model (Brown, Durbin and Evans, 1975).

Under the influence of the contribution of Brown, Durbin and Evans (1975), this study examined the stability of the models under investigation using the two graphical techniques- plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ). The sequential econometric steps followed in this study are summarised in Figure 3.1.

**Figure 3.1: Sequential Steps for Data Analysis in the Study**



**Source: Author's Compilation**

### 3.12 Ethical Consideration

In a research process, ethical consideration is a vital aspect which should be carefully considered by researchers in order to address possible limitations which may emanate in the study. According to Saunders, Lewis and Thornhill (2018), discussion about ethical consideration in research expresses the role of values in research which involves participation. As such, the view of Diener and Crandall (1978) highlights four major areas where the principles of ethics in research evolve: lack of informed consent, invasion of privacy, harm to participants and deception.

In studies requiring collection of primary data from participants, such studies possess high ethical risk which must be addressed in adherence to the research degree regulations of the university (Anglia Ruskin University). The ethical issues in studies

using primary data will be addressed using 'Stage 1 Research Ethics Application Form' at proposal approval stage, request for access from the organisation under investigation (if required), a participant information sheet and consent form for participants recruited for the study.

Be that as it may, research does not always involve collection of data from participants; some involve collecting data from routine management information system, surveys and other external sources. For research involving the use of secondary data as in the case of this study, such studies tend to possess low ethical risk as it does not involve human participation. However, ethical consideration must be identified in such studies which focus on possible injury to individual subjects and issue related to return for consent (Tripathy, 2013).

In situations where the secondary data contains identifiable information about participants, the researcher is compelled to provide detailed explanation why such identifiable information is unavoidable for the research (Tripathy, 2013). Additionally, the researcher must indicate how confidentiality of data and privacy of participants will be protected. On the other hand, if the data does not contain identifying information; for instance, publicly available data as in the case of this study, then acknowledgement to ownership of original data must be indicated.

For this study, publicly available data was collected from CBN and World Bank. As such, acknowledgement to ownership of original data was indicated in the study. In situations where the data are not publicly available, contact must be made to the Postgraduate Research Director of the university with the help of my supervisors in order to provide adequate ethical procedures to aid collection of data. The importance of this is to provide necessary documentations to formally introduce the researcher to the relevant authority where the secondary data will be collected in accordance with the research degree regulations of ARU. Also, during the process of data collection, the researcher must visit the authority on appointment with required documentations wearing ARU lanyard showing student Identification card and other forms of identification provided. Additionally, the compulsory and optional trainings provided by ARU have enhanced the researcher's knowledge about ethics and how to follow ethical procedures in research.



### 3.13 Reliability

Reliability and validity are characteristics of research quality. As such, the degree of reliability and validity ascribed to secondary data are determined by the method and source of data collection (Saunders, Lewis and Thornhill, 2018) as in the case of this study. According to Dochartaigh (2012), reliability of data can be determined by assessing the authority or reputation of the source of data collection. In this regard, data obtained from large and well-known organisations are prone to be reliable and trustworthy (Dochartaigh, 2012). For this study, the data were obtained from World Bank and Central Bank of Nigeria which are both large and well-known organisations. As the continued existence of these two organisations depends on the credibility of their data, the procedures for data collation are likely to be thorough and precise. Thus, it is arguable that this study possesses high reliability from the perspective of secondary data collected from famous and credible database.

Additionally, reliability of results is the degree at which the research findings of a study can survive close scrutiny or the degree at which a study can produce the same result if repeated (Collis and Hussey, 2014; Bell, Bryman and Harley, 2019). Based on the objective nature of positivist studies as already discussed and justified in sub-sections 3.2 to 3.6, it is arguable that this study possesses high reliability. Hence, the findings of this study can survive scrutiny and will produce the same result if repeated by the same or another researcher.

### 3.14 Validity

Validity refers to the extent at which a study measures the intention of the researcher (Bell, Bryman and Harley, 2019). The validity of this study will be assessed using internal and external validity as these two are more applicable to positivist studies (Saunders, Lewis and Thornhill, 2019). Internal validity in this study was established through investigation of causal relationships among variables using aggregated and disaggregated models. As such, the findings of this study show internal validity by providing theoretical link between economic growth and sectoral bank lending in Nigeria. According to Saunders, Lewis and Thornhill (2019), causal or explanatory studies would produce spurious research findings when the relationship between variables is caused by other factors. To address the issue of spurious research findings, this study considered three control variables (growth in labour, growth in gross capital formation and growth in human capital) to capture the theoretical proxies of economic growth in the models. Thus, it is arguable that this study possesses high internal validity.

On the other hand, external validity is concerned with the degree at which research findings of a study can be generalised to other applicable settings or groups (Saunders, Lewis and Thornhill, 2018). The empirical models in this study were examined on the Nigerian economy, thus, statistical generalisability to other countries was not established. However, the empirical models can be tested in other countries, which would generate different research findings due to factors such as: classification of economic sectors; data availability; data estimation techniques; diverse banking, economic and geopolitical landscapes. Hence, while this study established internal validity, it tends to possess low external validity.

### **3.15 Chapter Summary**

In this chapter, a full justification for the research methodology adopted in this study has been discussed. As such, a methodological framework has been provided which will serve as a guide for the study. Additionally, the philosophical assumptions of this study have enhanced the selection of an appropriate research approach and design for the study. In line with this, the study embraced the distinctive features of positivism and a mono-method quantitative research design. Furthermore, the strengths and weaknesses of the research methodology and method adopted for this study have been outlined where necessary. Particularly, this chapter has fulfilled the research objective five, by developing suitable empirical models for this study based on theories and existing studies. Thus, the next chapter of this thesis focuses on the case study for the research and presentation of data collected for the purpose of this research.

## **CHAPTER FOUR**

### **AN OVERVIEW OF NIGERIA'S ECONOMY**

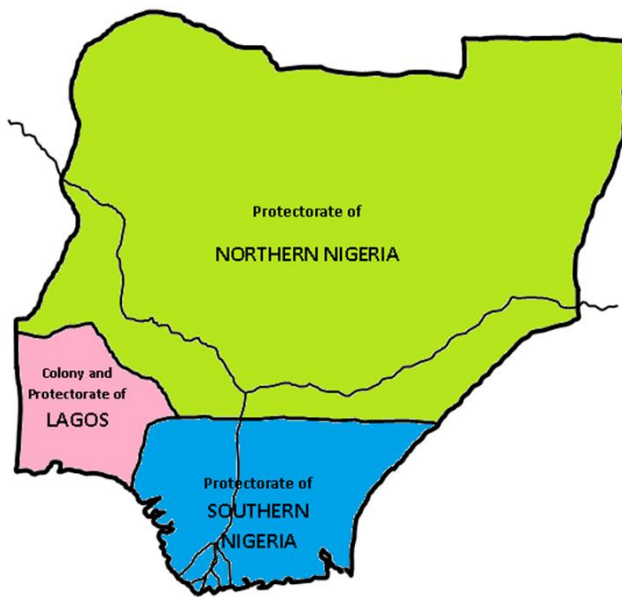
#### **4.1 Chapter Introduction**

This chapter focuses on the Nigerian economy as a case study for this thesis. As such, this chapter will provide a basis to fulfil the fourth research objective which is to investigate the Nigerian economy as a case study with analysis of its sectoral bank lending. Hence, this chapter provides discussion about historical background of Nigeria, the economic outlook of the country, its evolution of banking, and the economic sectors in Nigeria. Therefore, this chapter focuses mainly on Nigeria which is the context of the research to provide an in-depth understanding of the Nigerian economy.

#### **4.2 Historical Background of Nigeria**

The case study of this research focuses on Nigeria as already justified in the first chapter of this thesis. The background of Nigeria can be traced back to the infamous amalgamation of Colony of Lagos with Protectorate of Southern Nigeria in 1906 by Sir Walter Egerton. Afterwards, on 1<sup>st</sup> January 1914, Sir (later Lord) Frederick Lugard triggered the famous amalgamation of the Southern Protectorate which has already been amalgamated with Colony of Lagos, and the Northern Protectorate for easier governance by the colonial rulers (Omotayo, 2017; Campbell, 2018) as shown in Figure 4.1. Frederick Lugard served the position of high commissioner from 1906 to 1911 after accepting the appointment as Governor of Hong Kong. Afterwards in 1912, he returned to Nigeria as Governor of both Southern and Northern protectorates. In 1916, Frederick Lugard retired from his duties in Nigeria and returned to England after Nigeria had been well established to become a unified administrative territory.

**Figure 4.1: Amalgamation of Nigeria**



**Source: Biafran.org (2018)**

In line with the ongoing, the political regimes of Nigeria with aggregate sectoral distribution of bank lending are discussed thereafter.

#### **4.2.1 First Republic and Military Regimes (1963 to 1979)**

Nigeria grew through the 19<sup>th</sup> century with the influence and control of the British. Several constitutions granted Nigeria greater autonomy after World War II and gained independence from Britain on 1 October 1960. After independence, the titular Head of State in Nigeria remained the British monarch, Elizabeth II before a new constitution was adopted in 1963 which declared the nation a republic. With effect to this, Nnamdi Azikiwe was declared Nigerian first President while Abubakar Tafawa Balewa was declared Prime Minister on 1 October 1963.

Four years after independence and one year after republic, the first Nigerian national election took place in 1964 among two political alliances which incorporated the major parties- the Nigerian National Alliance (NNA) and the United Progressive Grand Alliance (UPGA). On the one hand, NNA comprised of Northern People's Congress (NPC), Western-based Nigerian National Democratic Party led by Akintola and other ethnic minority parties in Eastern and Midwestern regions. On the other hand, UPGA comprised of National Council of Nigeria and the Cameroons/National Convention of Nigeria Citizens (NCNC), the remnants of the Action Group and two minority-based northern allies (the Northern Elements Progressive Union and the United Middle Belt Congress).

In this election, The Nigerian National Alliance (NNA) won a huge majority after the key opposition grouping, the United Progressive Grand Alliance (UPGA) refused to participate. As such, a complementary election was further conducted in the Eastern Region which made UPGA win every seat in March 1965. The election was postponed for weeks and marked by malpractice, boycotts and violence. As such, there was suggestion for the Nigeria's armed forces to restore order which resulted to the first military coup in Nigeria on January 15, 1966 led by Major Chukwuma Nzeogwu. This first military coup resulted in the death of key political leaders such as Sir Abubakar Tafawa Balewa (the Prime Minister), Sir Ladoke Akintola, Sir Ahmadu Bello, Festus Okotie-Eboh. The coup brought Major-General Johnson Aguiyi-Ironsi to power but later assassinated on 29 July 1966 and succeeded by Lieutenant Colonel (later Major General) Yakubu Gowon in a counter-coup from 28 to 30 July 1966.

In line with the ongoing, military coup in Nigeria later became a norm. Yakubu Gowon was overthrown in a bloodless coup in 1975 which brought Brigadier Murtala Muhammed into power. Shortly, after this take-over, Murtala Muhammed was assassinated on 13 February, 1976 during the coup led by Buka Suka Dimka. After the assassination of Murtala, Lieutenant-General Olusegun Obasanjo took over as the Head of State from 13 February 1976 to 30 September 1979.

Table 4.1 shows the sectoral bank lending from 1960 to 1979. This analysis shows that the largest percentage of bank lending during this period is allocated to the production sector, and general commerce in Nigeria. This can be associated with high involvement of the country in production activities which are sold domestically and exported to other countries, particularly agriculture and discovery of oil in 1956. As such, during this period economic sectors in Nigeria were classified as preferred (manufacturing, agriculture and residential housing), less preferred (import and domestic trade) and others. In this regard, credit allocation were focused on the preferred sectors which boosted bank lending to production sector. The services sector has the lowest allocation of bank credit during this period, this can be attributed to the low level of economic development in Nigeria.

**Table 4.1: Aggregate Sectoral Bank Lending in Nigeria (1960 to 1979)**

<b>Production (N' Billion)</b>		<b>General Commerce (N' Billion)</b>		<b>Services (N' Billion)</b>		<b>Others (N' Billion)</b>		<b>Cumulative</b>
AFF	1.17	BDS	0.42	PUT	0.25	GOV	0.56	
MAN	5.21	DMT	2.39	TRC	1.42	PPF	2.26	
MAQ	0.39	EXP	1.53	CFI	0.54	MIS	0.98	
REC	3.67	IMP	2.13					
Total	10.43		6.47		2.21		3.81	22.93
<b>(N' Billion)</b>								
<b>%</b>	<b>45.6</b>		<b>28.2</b>		<b>9.6</b>		<b>16.6</b>	<b>100</b>

**Note:** AFF is Agriculture, Forestry and Fishery; MAN is manufacturing; MAQ is mining and quarrying; REC is real estate and construction; BDS is bills discounted; DMT is domestic trade; EXP is exports; IMP is imports, PUT is public utilities, TRC is transport and communications; CFI is credit to financial institutions; GOV is government; PPF is personal and professional; and MIS is miscellaneous.

**Source: Author's Compilation from CBN Statistical Bulletins**

#### 4.2.2 Second Republic and Military Regimes (1979 to 1993)

In 1979, a new bicameral national assembly was voted for by Nigerians consisting of The Senate and The House of Representatives. As such, Alhaji Shehu Shagari of the National Party of Nigeria was elected President on 1 October 1979 which marked the beginning of second republic and was re-elected in 1983. However, the second republic did not last long as the civilian government was overthrown by another military coup led by Major-General Muhammadu Buhari on 31 December 1983. Not after long, the Buhari administration was itself overthrown by another military coup in 1985 led by Major-General Ibrahim Babaginda which made him become the Head of State from 27 August 1985 to 1993 on resignation with a promise to end military rule.

Sectoral analysis of bank lending as showed in Table 4.2 follows the same pattern as the previous regime in Nigeria, interest rate regulation continued until adoption of SAP in 1986 which commenced deregulation of interest rate in Nigeria. As such, this regime witnessed the influence of both interest rate regulation and deregulation. In Table 4.2, production sector still has the highest allocation of bank credit due to increasing importance of production activities in the economy. Thus, this period experienced significant increase in aggregate lending to production sector which signifies continuous dependence on the production sector in the Nigerian economy. Consequently, there was reduction on aggregate lending to general commerce, services and 'others' sector in favour of production sector when compared to the first republic in Table 4.1. This further implies that the level of economic development in Nigeria during this period continued at a slow pace which reflects on aggregate lending to services sector.

**Table 4.2: Aggregate Sectoral Bank Lending in Nigeria (1980 to 1993)**

Production (N' Billion)		General Commerce (N' Billion)		Services (N' Billion)		Others (N' Billion)		Cumulative
AFF	42.90	BDS	1.50	PUT	3.23	GOV	10.47	
MAN	96.52	DMT	34.47	TRC	12.80	PPF	12.02	
MAQ	4.79	EXP	7.22	CFI	10.06	MIS	16.34	
REC	40.50	IMP	11.69					
Total	184.72		54.89		26.09		38.83	304.53
(N' Billion)								
%	60.6		18.0		8.6		12.8	100

**Note:** AFF is Agriculture, Forestry and Fishery; MAN is manufacturing; MAQ is mining and quarrying; REC is real estate and construction; BDS is bills discounted; DMT is domestic trade; EXP is exports; IMP is imports, PUT is public utilities, TRC is transport and communications; CFI is credit to financial institutions; GOV is government; PPF is personal and professional; and MIS is miscellaneous.

**Source:** Author's Compilation from CBN Statistical Bulletins



#### 4.2.3 Third Republic and Transmission to Democracy (1993 to 1999)

To mark the commencement of the third republic, a presidential election took place on 12 June 1993 with Moshood Kashimawo Olawale (MKO) Abiola of Social Democratic Party (SDP) with a decisive victory over Bashir Tofa of the National Republican Convention. Nonetheless, Babangida annulled the election result which caused chaos in the country and the aftermath pressure made him resign on 23 August 1993. Consequently, Chief Ernest Shonekan was appointed by Babangida as interim president until 17 November 1993 when General Sani Abacha continued the military rule in Nigeria following a coup. Abacha was the Head of State until his death on 8 June 1998 and was swiftly replaced by General Abdulsalami Abubakar who ensured full transmission to democracy on 29 May, 1999 to President Olusegun Obasanjo. Consequently, since the remarkable democratic handover on 29 May 1999, the date has always been celebrated in Nigeria as a public holiday.

Table 4.3 shows the sectoral bank lending analysis for this regime, the influence of interest deregulation becomes significant as bank lending to 'others' sector has considerable huge bank credit allocation over general commerce. However, production sector still has the largest share of bank lending as expected. The credit allocation in this period hugely focuses on market forces as determinant of economic activities. Hence, it can be deduced that there was high market demand for activities in the production and 'others' sector during this period which boosted bank lending to the sectors over general commerce and services.

**Table 4.3: Aggregate Sectoral Bank Lending in Nigeria (1994 to 1999)**

<b>Production (N' Billion)</b>		<b>General Commerce (N' Billion)</b>		<b>Services (N' Billion)</b>		<b>Others (N' Billion)</b>		<b>Cumulative</b>
AFF	162.47	BDS	0.34	PUT	4.13	GOV	51.50	
MAN	460.47	DMT	17.51	TRC	93.27	PPF	3.64	
MAQ	105.62	EXP	124.97	CFI	39.86	MIS	546.24	
REC	44.86	IMP	14.43					
Total	773.42		157.25		137.27		601.38	1669.32
<b>(N' Billion)</b>								
<b>%</b>	<b>46.3</b>		<b>9.4</b>		<b>8.2</b>		<b>36.1</b>	<b>100</b>

**Note:** AFF is Agriculture, Forestry and Fishery; MAN is manufacturing; MAQ is mining and quarrying; REC is real estate and construction; BDS is bills discounted; DMT is domestic trade; EXP is exports; IMP is imports, PUT is public utilities, TRC is transport and communications; CFI is credit to financial institutions; GOV is government; PPF is personal and professional; and MIS is miscellaneous.

**Source: Author's Compilation from CBN Statistical Bulletins**

#### 4.2.4 Fourth Republic (1999 to date)

The fourth republic in Nigeria emerged with a civilian government and 1999 constitution. Obasanjo was re-elected in 2003 until 29 May 2007 before handing over to Umaru Musa Yar'Adua. However, Yar'Adua died in office on 5 May 2010 and his vice-president; Goodluck Jonathan was sworn in as acting President on 6 May 2010. Jonathan contested and won the Presidential election in 2011 before losing to Muhammadu Buhari in 2015 election. On 6 June 2018, Buhari announced the cancellation of May 29 which has been celebrated as democracy day since 1999. This action was prompted by his argument that 12 June 1993 was the date of election which was famously adjudged as the freest and fairest in the history of Nigeria. Hence, the date was far more symbolic than May 29 and even October 1<sup>st</sup> which is the date of Nigeria's independence (Sahara Reporters, 2018). Thus, Nigeria experienced reign of military juntas between 1966 to 1979, and 1983 to 1998 before the emergence of democracy in 1999. In history to date, Nigeria has been ruled twice by Obasanjo and Buhari as both military Head of State and President. In this regard, the fourth republic in Nigeria continues with the re-election of President Buhari in 2019 general election.

Table 4.4 shows the sectoral bank lending for this regime, due to an increase impact of globalisation on different countries in recent years, economic development in Nigeria has also increased. Consequently, there has been a significant increase of bank lending to services sector with innovation of several inputs to other businesses in Nigeria. For instance, telecommunication in Nigeria experienced a new turn with the introduction of Global System for Mobile communications (GSM) during Obasanjo's tenure in 2001. As such, the services sector in Nigeria has become important to the economy. General commerce has been unexpectedly low during this period which can be attributed to fluctuations in oil prices which affects the volume of exports in Nigeria. Table 4.4 further shows the continuous relevance of production sector on the Nigerian economy, which is the driving force of the economy, and 'others' has been in a similar pattern with the previous regime which can be attributed to increasing government spending.

**Table 4.4: Aggregate Sectoral Bank Lending in Nigeria (2000 to 2017)**

<b>Production (₦' Billion)</b>		<b>General Commerce (₦' Billion)</b>		<b>Services (₦' Billion)</b>		<b>Others (₦' Billion)</b>		<b>Cumulative</b>
AFF	3,360.40	BDS	-20.38	PUT	2,636.12	GOV	9,226.99	
MAN	14,102.78	DMT	119.64	TRC	19,315.31	PPF	17.02	
MAQ	20,707.90	EXP	211.26	CFI	7,171.59	MIS	32,118.83	
REC	9,342.30	IMP	8,455.08					
Total	47,513.38		8,765.60		29,123.02		41,362.84	12,6764.84
(₦' Billion)								
<b>%</b>	<b>37.5</b>		<b>6.9</b>		<b>23.0</b>		<b>32.6</b>	<b>100</b>

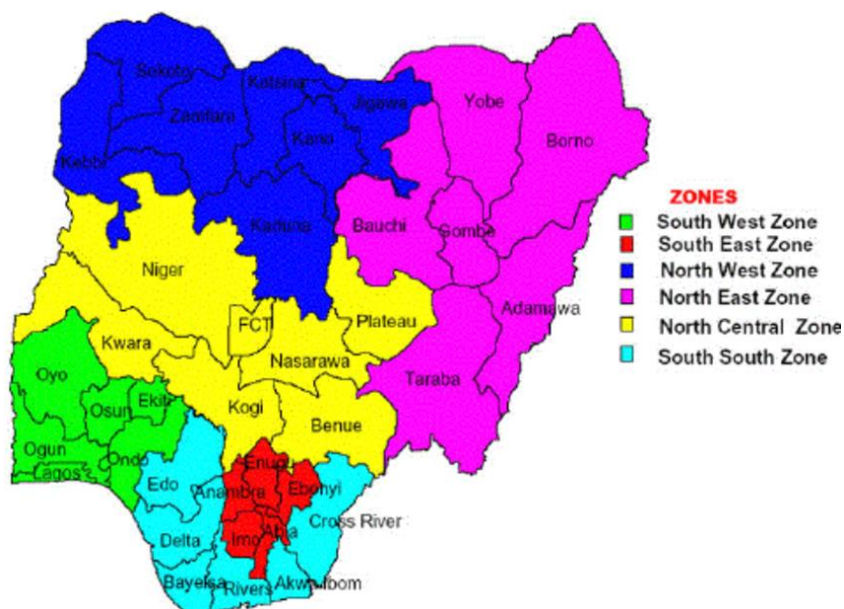
**Note:** AFF is Agriculture, Forestry and Fishery; MAN is manufacturing; MAQ is mining and quarrying; REC is real estate and construction; BDS is bills discounted; DMT is domestic trade; EXP is exports; IMP is imports, PUT is public utilities, TRC is transport and communications; CFI is credit to financial institutions; GOV is government; PPF is personal and professional; and MIS is miscellaneous.

**Source:** Author's Compilation (2018) from CBN Statistical Bulletins

### 4.3 Economic Outlook of Nigeria

Nigeria is a main regional player in West Africa with a population of approximately 184 million which accounts for 47 percent of total population in West Africa and has one of the prevalent population of youth in the world (World Bank, 2017). However, unemployment rate of youth in Nigeria has been high with an average rate of 23.63 percent from 2014 to 2018, with a record low of 11.70 percent in 2014Q4 and all-time record high of 38 percent in 2018Q2 (Trading Economics, 2019). The study of Adebayo (2013) reveals that youth unemployment in Nigeria contributes immensely to increasing involvement in criminal activities which has hindered economic development in the country. Based on the population of Nigeria, the country is the largest in Africa in close competition with South Africa. Nigeria possesses the largest natural gas reserves and biggest oil exporter in Africa. The country has depended hugely on oil after its discovery in 1956 at Oloibiri, Niger Delta by Shell-BP (NNPC, 2018). Nigeria consists of thirty-six (36) states excluding the Federal Capital Territory (FCT), six geopolitical zones (as shown in Figure 4.2) and 774 Local Government Areas across the states.

**Figure 4.2: Map of Nigeria showing the Thirty-six (36) States and Six (6) Geopolitical Zones**

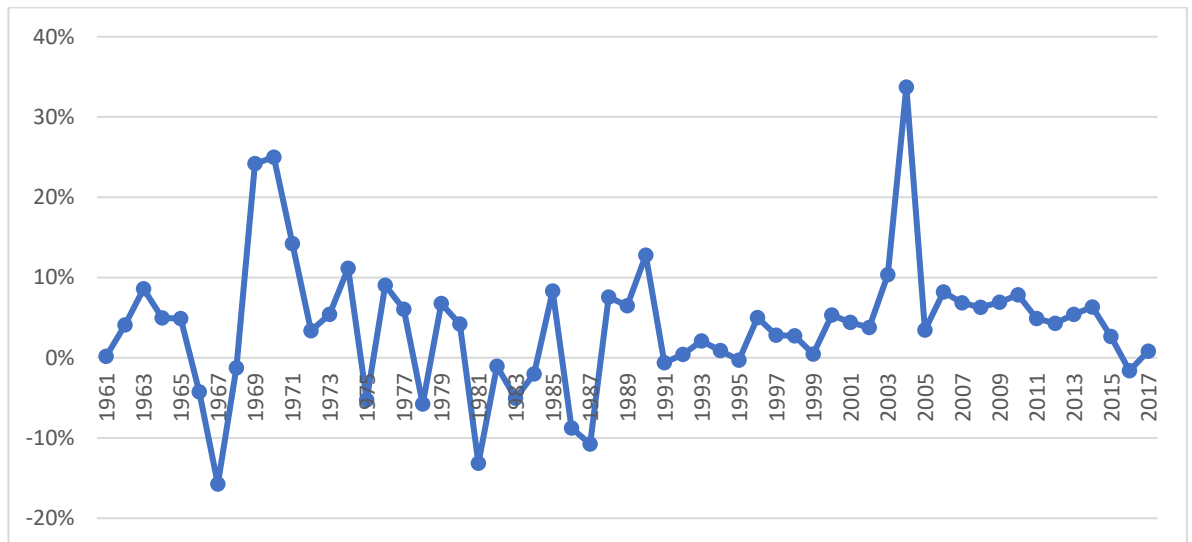


Source: Bakare (2015)

#### 4.3.1 GDP Growth and Crude Oil

According to Cornwall (2015), growth of several economies is distorted by factors such as: incapacity and inability to offer sufficient long-term productive investments to boost full employment, financial depression, effective distribution channel and stagnation. In the Nigerian context, the structural transformation focused on enhancing the economy has been affected by income inequality and unemployment since inception (Imimole and Imuoghele, 2015). Annual GDP growth rate in Nigeria from 1982 to 2018 is on average of 3.88 percent, reaching a record low of -7.81 percent in the fourth quarter of 1983 and an all-time high rate of 19.17 percent in fourth quarter of 2004 as shown in Figure 4.3.

**Figure 4.3: Nigeria GDP Annual Growth Rate (1961 to 2017)**



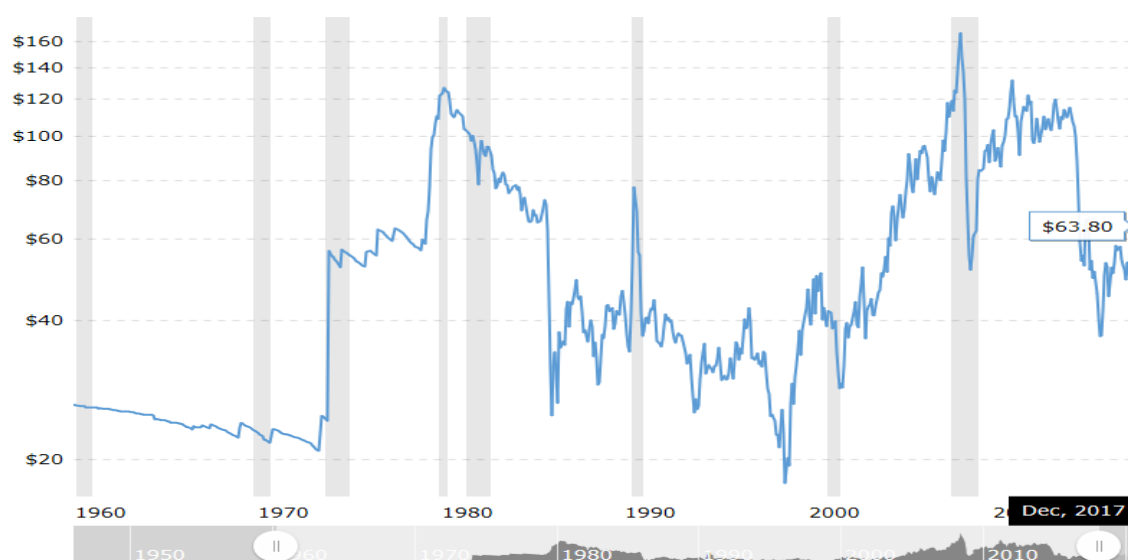
**Source: Author's Compilation from World Bank Database**

In recent years, the Nigerian economy has been experiencing sluggish growth with a decline to 3 percent in the last quarter of 2015 in comparison to 6.2 percent in 2014 as shown in Figure 4.4. As oil dependent economy, this decrease in growth rate was caused by the adverse impact of external shocks on the Nigerian economy, particularly decline in global oil prices from peak of \$115 per barrel in June 2014 to below \$35 by the end of February 2016 (Rogoff, 2016) as shown in Figure 4.5. This sharp decline in oil prices during this period is similar to the supply-driven decline in

1985-1986 when earlier production cuts was reversed by OPEC<sup>11</sup>, and the 2008-2009 decline caused by outset of the global financial crisis when demand collapsed (Rogoff, 2016).

However, Rogoff (2016) further asserts that the recent oil price decline appears to be a mix of supply-driven and drop in demand experienced previously. As at December 2017, the global crude oil price was \$63.80 as shown in Figure 4.4. In this regard, the annual growth rate of the Nigerian economy in Figure 4.3 shows a similar pattern with the global oil prices in Figure 4.4 evidencing the country's vulnerability to production level and prices of crude oil as an oil dependent economy.

**Figure 4.4: Trend of Global Crude Oil Prices (1960 to 2017)**



**Source: Macrotrends (2019)**

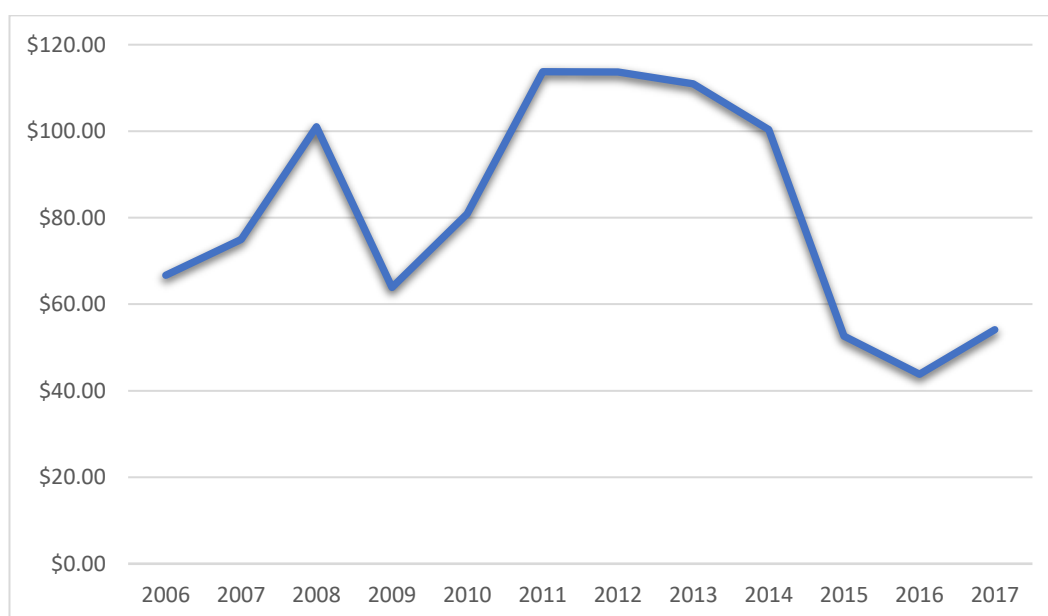
<sup>11</sup> OPEC is a permanent intergovernmental organisation founded at the Baghdad, Iraq conference on September 10<sup>th</sup> to 14<sup>th</sup> by five founding members: Iran, Iraq, Saudi Arabia, Kuwait and Venezuela. Afterwards, ten other member countries joined the five founding countries: Qatar in 1961, Indonesia in 1962- suspended membership in January 2009 and reactivated in January 2016, Libya in 1962, United Arab Emirates in 1967, Algeria in 1969, Nigeria in 1971, Ecuador in 1973- suspended membership in December 1992 but rejoined October 2007, Gabon in 1975- terminated membership in January 1995 but reactivated July 2016, Angola in 2007, Equatorial Guinea in 2017 and Congo in 2018. The headquarters was in Geneva, Switzerland from 1960 before it was moved to Vienna, Austria on 1<sup>st</sup> September, 1965 (OPEC, 2018).

The objective of OPEC is to unify and co-ordinate petroleum policies between member countries with the aim to ensure stable and fair prices, economic and efficient supply of petroleum, and fair return on capital to investors (OPEC, 2018).

Furthermore, Figure 4.4 shows that the Nigerian economy continued to decline from 2015 in response to crude oil prices and slipped into recession in 2016Q1 as the economy contracted by 1.6 percent. This was further triggered by the sabotage of oil infrastructures in the Niger Delta region (Santander, 2018). In 2016Q4, the economy further contracted by 1.3 percent with real GDP dropping from ₦18,533.75 billion in 2015Q4 to ₦18,292.95 billion in 2016Q4 (Tijani, 2017). Overall, real GDP in Nigeria contracted on average of 1.51 percent for the full year of 2016. Consequently, the oil and non-oil sectors recorded a decline from the poor growth in 2015 to the recession period in 2016.

Additionally, Figure 4.5 shows the trend of oil prices in Nigeria from 2006 to 2017 (based on data availability from the CBN). Comparing Figure 4.3 with Figure 4.5, the similar pattern shown in these figures is a further evidence that economic growth in Nigeria is responsive to crude oil prices in the country. For instance, the significant drop in crude oil price in Nigeria from \$100.4 in 2014 to \$52.6 in 2015 can be argued as the main factor which drove the Nigerian economy into recession in 2016. Thus, Figures 4.3, 4.4 and 4.5 are clear indication that economic growth in Nigeria is responsive to global and national crude oil prices.

**Figure 4.5: Trend of Crude Oil Prices in Nigeria (2006 to 2017)**



**Source: Author's Compilation from CBN (2020).**

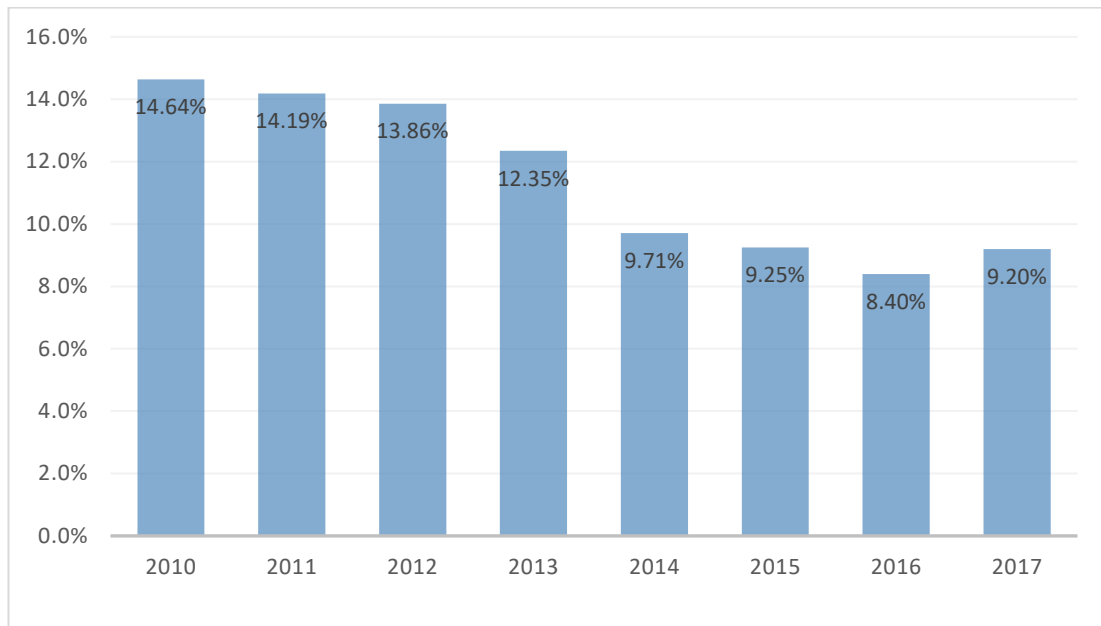


According to Tijani (2017), oil sector in 2015Q4 contracted by 8.23 percent with a further decline to 22.01 percent in 2016Q3, an improvement to the latter period was recorded at a contraction of 12.38 percent in 2016Q4. On the other hand, the non-oil sector recorded a growth of 3.14 percent in 2015Q4 which dropped to a growth of 0.03 percent in 2016Q3 before contracting by 0.33 percent in 2016Q4 (Tijani, 2017). However, the economy eventually recovered from recession in 2017Q2 with an estimated GDP growth of 0.8 percent. This recovery was driven by higher oil production and prices, and stronger agricultural performance in the economy (African Development Bank, 2018).

As such, oil prices increased to an average \$52 per barrel in 2017 from an average of \$43 per barrel in 2016 (African Development Bank, 2018). Also, as shown in Figure 3.5, crude oil price in Nigeria increased from an average of \$43.8 in 2016 to an average of \$54.08 in 2017. Additionally, following the de-escalation of conflict in Niger Delta region, oil production in Nigeria increased to 2.03 million barrels per day in the third quarter of 2017 from 1.45 million in the first quarter of 2017 (African Development Bank, 2018). As such, the oil production rate in Nigeria is expected to remain at similar level in 2018 and 2019 in accordance with the production restrictions of OPEC.

As already established, the rate of economic growth in Nigeria is greatly determined by crude oil prices. Figure 4.6 further shows the contribution of oil to real GDP in Nigeria from 2010 to 2017 (based on availability of data), which shows contributions of 14.64%, 14.19%, 13.86%, 12.35%, 9.71%, 9.25%, 8.40% and 9.20% respectively. In a similar vein to Figures 4.3, 4.4 and 4.5, the contribution of oil on real GDP in Nigeria shows significant drop during 2014 to 2016, which further explains the periods of drop in oil price and recession in Nigeria. However, the contribution of oil to real GDP has increased in 2017 in the wake of the Nigerian economy's recovery from the recession.

**Figure 4.6: Contribution of Oil to GDP Growth in Nigeria (2010 to 2017)**



**Source: Author's Compilation from National Bureau of Statistics Reports**

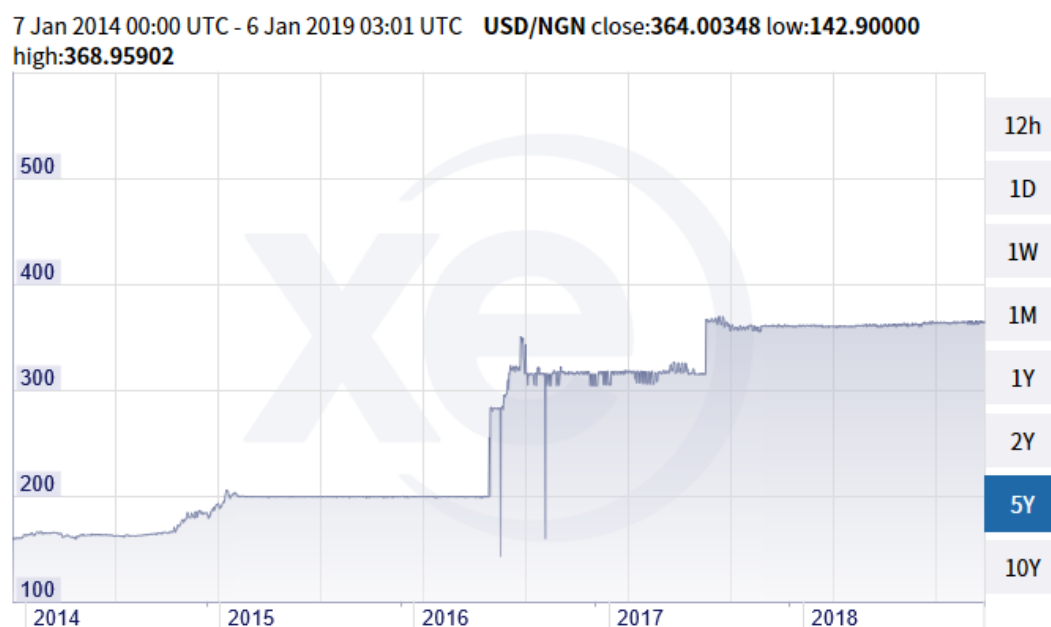
#### **4.3.2 Exchange Rate in Nigeria**

The drop in oil prices also had adverse effect on the exchange rate of the Nigerian naira (₦) to US Dollar (\$). According to Mitchell (2016), foreign reserves before the financial crisis in 2008-09 were about \$60billion and the economy had about \$20billion savings in its excess crude account after the crisis. However, Nigeria had about \$4billion as oil prices began to drop in 2014. As such, oil prices dropped by 60 percent, the revenue of the economy dropped by 81 percent. In response to drop in oil prices and depleted foreign reserves, CBN pegged the value of the naira to the US dollar at ₦198 while it traded for ₦370 on the black market in March 2015 (Sow, 2016).

However, on the 20th of June 2016, the CBN decided to adopt more flexibility and the dollar peg was lifted with an attempt to devalue the naira in response to tumbling oil prices (Martin, 2016). As such, the view of Martin (2016) and Kazeem (2016) accentuates that shortly after the peg was removed, the market-driven policy resulted the naira to lose over 40 percent of its value falling to ₦282 per US dollar. According to Focus Economics (2016), few weeks after currency devaluation, the CBN intervened in the foreign exchange market with the aim to keep the naira within the range of ₦282 to ₦285 per US dollar. In mid-July 2016, CBN reduced its intervention in the foreign exchange market which further reduced the naira to ₦322 per US dollar

(Focus Economics, 2016). Since then, the naira has been fluctuating at low levels to US dollar, the naira further drastically devaluated from ₦322 at the end of July 2017 to ₦365 at the beginning of August 2017. The value was at ₦364 to US dollar as at 6 January 2019 (See Figure 4.7).

**Figure 4.7: XE Currency Charts: USD to NGN**



**Source: XE (2019)**

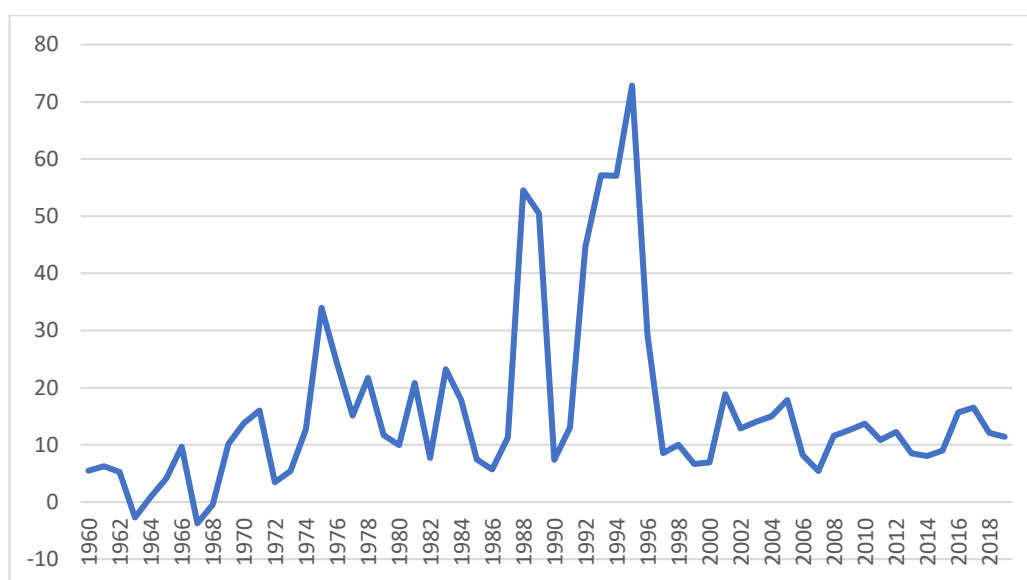
Furthermore, the slight and fragile recovery of the Nigerian economy in 2017 was attributable to improvement and availability of currency and reserves. This improvement was enhanced by the introduction of an exchange rate for exporters and investors in April 2017, an increase in oil prices, stricter or contractionary monetary policy and attractive return on government securities (Santander, 2018). The monetary policy rate (MPR) has remained at 14 percent since July 2016 in control of inflation and to strengthen the naira (African Development Bank, 2018).

Additionally, fiscal policy remained expansionary in 2017 as it was in 2016. However, total government spending as a percentage of GDP declined to 10.3 percent in 2017 from 13 percent in 2014. Concurrently, government revenue declined to 5.6 percent in 2017 from 11.4 percent in 2014. As such, budget deficit increased to 4.8 percent in 2017 from 4.7 percent in 2016, with projection to improve to 4.3 percent and 4.1 percent in 2018 and 2019 respectively with improvement in revenue (African Development Bank, 2018).

### 4.3.3 Inflation Rate in Nigeria

Nigerian economy has always been hit by high inflation rate with an average of 15.8 percent between 1960 and 2019, reaching a record low of -3.72 percent in December 1967 and record high of 72.84 percent in December 1995 as shown in Figure 4.8 below (Macrotrends, 2020).

**Figure 4.8: Trend of Inflation Rate in Nigeria from 1960 to 2019 (%)**



**Source: Author's Compilation from Macrotrends (2019)**

In recent years, inflationary pressure in Nigeria has been stubbornly high and double digits- increasing gradually since 2015 before taking a lofty effect in January 2016 following decrease in oil prices and recorded at 15.68 percent at the end of 2016 (Santander, 2018). A decline in inflation started in December 2018 which was recorded as 12.09 percent at and eased further to 11.40 percent in December 2019 (Macrotrends, 2019). However, the Nigerian economy has been witnessing incessant high inflation rate over the years which remains a macroeconomic issue.

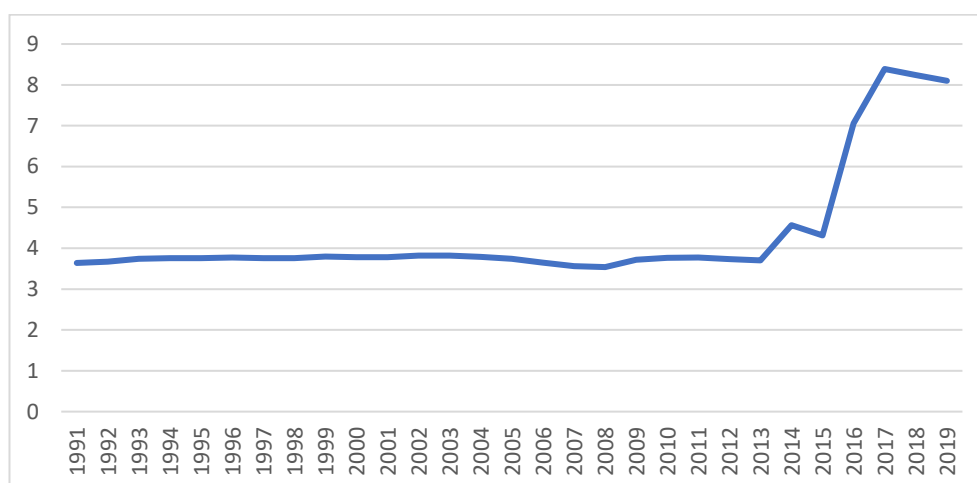
### 4.3.4 Unemployment Rate in Nigeria

Another incessant obstacle to the economic outlook of Nigeria is unemployment. Existing studies such as Akeju and Olanipekun (2014) and Enejoh and Tsauni (2017) find short and long-run relationship between unemployment and economic growth in Nigeria. The study of Enejoh and Tsauni (2017) also finds a unidirectional causality running from unemployment rate and economic growth in Nigeria. Imoisi, Amba and Okon (2017) reveals significant impact of unemployment on economic growth in Nigeria. Seth, John and Dalhatu (2018) reveals a short-run relationship between

unemployment and economic growth in Nigeria, while no long-run relationship exists between the two variables. Additionally, the study of Ewubare and Ushie (2018) shows impact of unemployment rate among men, women and youth on economic growth in Nigeria. In another dimension, the study of Onwachukwu (2015) reveals that unemployment does not have significant impact on economic growth in Nigeria.

The average unemployment rate in Nigeria from 1991 to 2019 (based on the availability of data) is 4.36 percent, with the lowest rate of 3.59 in 2008 and highest rate of 8.09 in 2019 as shown in Figure 4.9 (Macrotrends, 2019). From Figure 4.9 unemployment rate in Nigeria has been increasing continuously since the recent decrease in oil prices in 2015, despite the recovery of oil prices in 2017; unemployment rate in Nigeria remains high.

**Figure 4.9 Trend of Unemployment Rate in Nigeria from 1991 to 2019 (%)**



**Source: Author's Compilation from Macrotrends (2019)**

According to Kazeem (2017), unemployment rate in Nigeria has caused businesses to struggle amid the first recession in two decades especially businesses that depend on foreign transactions due to crucial scarcity of dollars in the economy. The aviation industry in Nigeria was specifically affected by the incessant high unemployment. In February 2016, the country's largest airline, Arik Airline which accounts for 55 percent of passenger traffic in the country was debt-ridden which led the government to take over the business to prevent it from collapse. In a similar vein, Aero contractors which is one of the top airlines in Nigeria suspended operations in September 2016.

#### 4.3.5 Economic Recovery and Growth Plan (ERGP) in Nigeria

The measure to restore the Nigerian economy following recession and high inflation rate was launched by President Muhammadu Buhari in April 2017 under Economic Recovery and Growth Plan (ERGP) 2017 to 2020. According to Ministry of Budget and National Planning (2017), the vision of ERGP is aimed at sustained inclusive growth with a structural economic transformation of increasing efficiency in both public and private sector. As such, the three broad objectives of the programme are to restore growth, invest in the citizens of the country and build a globally competitive economy (Ministry of Budget and National Planning, 2017). By 2020, the outlook for the plan is to deliver the following outcomes as outlined henceforward.

To maintain a stable macroeconomic environment by reducing inflation rate to single digits by 2020. Additionally, the plan seeks to maintain stability of exchange rate through alignment of monetary, fiscal and trade policies. Also, to increase growth in Real GDP by 4.62 percent over the period 2017 to 2020, to reach 7 percent by the end of 2020. The economy is expected to have a strong growth and recovery in production of crude oil and natural gas, from 1.8 mbpd in 2016 to 2.2 mbpd in 2017 and 2.5 mbpd by 2020. The plan also seeks to transform the agricultural sector and maintain food security by increasing crop production, forestry, livestock, fisheries and the value chain. In this regard, Nigeria is projected to become a net exporter of main agricultural products such as vegetable oil, cashew nuts, cassava, rice and groundnuts by 2020. For sufficiency in power and petroleum products, the ERGP aims to attain 10 Gigawatt (GW) of operational capacity and to enhance energy mix through increase usage of renewable energy. As such, by 2020, the economy is projected to become a net exporter of refined petroleum products.

In line with this, the ERGP also focuses on transportation infrastructure as one of its main priorities in order to hugely improve transportation network (port, rail and road) in Nigeria by 2020. As such, the public sector is expected to have a strong partnership with the private sector given the scale of investment required to achieve the outcome. Also, the ERGP seeks to create an industrialized economy in Nigeria through strong recovery of SMEs, services and manufacturing sectors; particularly, food and beverage, and agro-processing segments. The ERGP is projected to increase manufacturing sector by an average annual growth of 8.5 percent from 2017 to 2020, with an estimate figure of 10.6 percent by 2020.

The ERGP also include an objective of increasing job creation and youth empowerment and improving human capital. As such, the plan is expected to reduce the increasing unemployment in the economy to 11.23 percent by 2020. Also, the plan focuses on the government investing in health and education sector to fill existing skills gap in the economy. This implies creation of over an average of 3.7million jobs yearly or over 15 million jobs within the period 2017 to 2020. This plan to increase job creation is focused on youth empowerment which ensures that youth are the priority recipient of such plan. In May 2016 before the ERGP was launched, about a million people applied for 10,000 listed vacancies in the Nigerian Police Force (Kazeem, 2017). Also, nearly 700,000 applications were received for 500 advertised positions in the Federal Tax Agency (Kazeem, 2017). These issues show the alarming rate of unemployment in Nigeria in relation to trend of unemployment rate in figure 3.9.

The last key outcome of the ERPG is to improve foreign exchange inflows from the non-oil sector through economic diversification. The demand for foreign exchange is projected to drop due to reduction in importation of petroleum products. Such reduction is attributable to improvement in local refining capacity through the implementation of the ERGP. Be that as it may, the effectiveness of the ERGP cannot be ascertained yet as it is just at the initial stage of its implementation. However, this study argues that the Nigerian economy recovered from recession in 2017Q2 resulting from increase in global oil prices rather than effect of the ERGP. As such, the recovery in oil prices and production will aid the government in achieving growth and its structural reforms in economic diversification. Additionally, the effective implementation of the ERGP by 2020 will help to reduce the country's dependence on oil (African Development Bank, 2018).

#### **4.4 The Evolution of Banking Industry in Nigeria**

In every economy, the financial system serves as a focal point for productive activities within the economy (Ogujiuba and Obiechina, 2011) as it encompasses an association of banks and other financial institutions with broad range of financial instruments (Ogujiuba and Obiechina, 2011; Ogbonna et al., 2013). In Nigeria, other financial institutions in the financial system comprises of Development Finance Institutions, Microfinance Banks, Primary Mortgage Banks, Finance Companies and Financial Markets (CBN, 2016). According to Ogujiuba and Obiechina (2011), the Nigerian financial system is saddled with the responsibility of enhancing financial intermediation, pivot for implementing monetary policy and foster ample payment system within the economy. The view of Alabede (2012) affirms that the banking

sector in Nigeria remains a vital element of the financial sector as it accounts for about 90 per cent of the total assets within the Nigerian financial system and about 60 per cent of market capitalization in the Nigerian Stock Exchange Market.

According to Odeleye (2014), over the last two decades, the Nigerian banking sector has experienced several developments caused by restructuring, liberalisation and technological progress within the financial sector. These developments in the Nigerian banking environment have affected banking operations in Nigeria. As such, development of banking activities in Nigeria into five eras: free banking era, regulation banking era, deregulation banking era, consolidation banking era and post-consolidation banking era. These eras are discussed hereafter.

#### **4.4.1 Free Banking Era in Nigeria (1892 to 1952)**

The free banking era is the commencement of banking activities in Nigeria during the pre-independence period before 1952 which introduced dichotomy among indigenous and foreign banks (Barros and Caporale, 2012; Mamman and Hashim, 2014). According to Mamman and Hashim (2014), the free banking era is characterized by two main characteristics. The first characteristic of the era was the absence of banking legislation which permitted free establishment of banking organisations by individuals after registration under the Companies Ordinance 1948. The second characteristic of the era was the establishment of five banks which consisted of three biggest foreign banks and two biggest indigenous banks. During this period, the foreign banks obtained operating licences abroad which made these banks dominate banking activities in Nigeria and acted solely in the interest of the foreign owners rather than the interest of the Nigerian economy and (Brownbridge, 1996 as cited in Barros and Caporale, 2012).

Banking operations in Nigeria began in the free banking era with the establishment of African Banking Corporation (ABC) in 1891 and two years after, the establishment of Bank of British West Africa (BBWA) (now First Bank of Nigeria Plc) took over ABC. For several years, BBWA was the only bank operating in Nigeria and was later joined by Barclays Bank (now Union Bank Plc) in 1912 which was the second foreign bank during the era. The third foreign bank which operated during the free banking era was British and French Bank Limited (now United Bank for Africa Plc) established 1949 (Mamman and Hashim, 2014). The first indigenous bank during this era was National Bank of Nigeria, established 1933 and the second indigenous bank was African Continental Bank Limited which commenced operation in 1947 (Alabede, 2012).



Based on lack of bank regulation during this era, entry was relatively free for banks which created an avenue for different types of speculative investors who operated under-capitalised and poorly managed banks (Barros and Caporale, 2012). As such, this prompted early exit among indigenous banks and majority of the banks had collapsed by 1940. According to Adegbite (2007) as cited in Barros and Caporale (2012), despite the collapse of indigenous banks during this era, yet incorporation of banks did not cease; 150 (One hundred and fifty) banks were established between 1940 and 1952. Consequently, the several collapses of banks during the free banking era necessitated the introduction of legislation in order to control the activities of the Nigerian banking industry by passing the Banking Ordinance in 1952 (Somoye, 2008; Barros and Caporale, 2012; Mamman and Hashim, 2014). This marked the commencement of regulated era in the Nigerian banking industry with the aim of regulating banking operations.

#### **4.4.2. Regulation Banking Era in Nigeria (1952 to 1986)**

Under the regulation banking era which commenced with 1952 Banking Ordinance, banks were required to have a banking licence with a minimum paid-up capital of £25,000 for indigenous banks and £200,000 for foreign banks before carrying out banking activities in Nigeria (Mamman and Hashim, 2014). However, there were still several bank failures recorded during 1953 to 1959 due to liquidity of banks (Somoye, 2008). This was attributed to the assertion of Barros and Caporale (2012) which affirms that the emanation of regulation in 1952 appeared to effect little or no changes on banking activities due to the non-existence of regulator to enforce compliance. According to Somoye (2008), despite the introduction of Banking Ordinance in 1952, there was inadequate liquid assets by banks to meet the demands of customers and there was no existing well-organised financial system with sufficient financial instruments to aid investment. Thus, banks simply invested in real assets which could not be easily converted to cash without losing value when the need arose (Somoye, 2008).

As such, this impelled the Federal Government to introduce the Loynes Commission on September 1958 with the support of World Bank Report which led to the promulgation of 1958 Ordinance and establishment of the Central Bank of Nigeria (CBN) (Somoye, 2008). The period 1959 to 1969 is regarded as the origin of serious bank regulation in Nigeria due to the establishment of CBN, capital markets, formal money and portfolio management. Following these developments, the Banking Ordinance of 1952 was later replaced with the Banking Decree of 1969 (Mamman

and Hashim, 2014). Within this period, the Treasury Bill Ordinance was enacted which resulted to the issuance of first treasury bills in Nigeria on April 1960 and the establishment of Company Acts in 1968 (Somoye, 2008). According to Alabede (2012), with the CBN supervising the Nigerian banking industry, the authorised capital of foreign banks was increased to £400,000 in 1958.

Additionally, the regulated era consisted of a second phase which was the indigenization phase of the 1970s. During this later period of the regulated era, various control measures were introduced by the Nigerian government such as entry restrictions in the banking industry, nationalization of foreign-owned banks, interest rate ceiling or a deposit rate floor (Barros and Caporale, 2012). As such, this phase is regarded as static period as it reflected low number of banks with establishment of very few branches within Nigeria. Furthermore, the CBN adopted interest rate ceilings and selective sectoral policies which allowed direct channelling of domestic credit to priority or favoured sectors (Eregha, 2010). However, the view of Eregha (2010) argues in line with McKinnon (1973) and Shaw (1973) that direct sectoral allocation of credit to favour sectors hinders financial intermediation as financial markets will tend to accommodate credit demands as planned by the government and ignore risks. In Nigeria, the sectors were classified as preferred (manufacturing, agriculture and residential housing), less preferred (import and domestic trade) and others.

Following the developments within the regulation era, the Nigerian banking system remained quite stable until 1986 when the Ibrahim Babangida Administration launched the Structural Adjustment Programme (SAP) due to pressure from World Bank and International Monetary Fund (Chibuike, 2000). According to Chibuike (2000), the stability in the Nigerian banking system before the introduction of SAP was partly due to government support. For instance, before SAP, the Nigerian government was unwilling to allow failure of any bank regardless the financial condition and/or the management quality of such bank. In this regard, the government dreaded the probable effects of bank failure on the confidence in the banking system and the economy (Chibuike, 2000). Hence, the Nigerian government made deliberate actions to support inefficient banks which concurrently protected the shareholders of such banks.

#### 4.4.3. Deregulation Banking Era in Nigeria (1986 to 2004)

The initiation of SAP in Nigeria was in response to the emphasis on finance-growth postulation by the studies of McKinnon (1973) and Shaw (1973). Following regulation of interest rates, McKinnon (1973) and Shaw (1973) argue that the government intention of promoting economic growth through credit to favoured sectors have led to repression of the financial system. Hence, SAP was introduced in 1986 with the aim of ensuring a competitive and efficient financial sector which possess the capacity of driving the Nigerian economy from austerity to prosperity (Ogbonna et al., 2013). As such, SAP was designed to achieve viability of balance of payment by changing and restructuring consumption and production patterns in the economy. Additionally, SAP was adopted to eradicate price distortions, rationalise the role of public sector, improve non-oil export base, reduce high dependency on imports of consumer goods and exports of crude oil, enhancing potential growth of the private sector and attain sustainable growth (Chibuike, 2000).

In order to achieve these objectives, the main strategies of SAP were adoption of market-determined exchange rate system for the Nigerian Naira (₦), deregulation of external trade and payments system, decrease in prices and administrative controls, and increase in reliance on market forces as a main determinant of economic activities (Chibuike, 2000). In line with the foregoing, some of the control measures introduced in the regulation era were relaxed such as: entry conditions, interest rate regulation and sectoral credit allocation quotas (Barros and Caporale, 2012). Additionally, with the introduction of SAP, the CBN introduced a market-based interest rate regarded as Minimum Rediscount Rate (MRR) in August 1987. According to CBN (2016), the MRR allowed banks to determine deposit and lending rates based on market situations through negotiation with their customers as a major initiative of deregulation era.

With the newly introduced SAP, the economic policy dispensation has shifted focus from preventing bank failure by providing direct support to protecting the deposits of customers (NDIC, 1995 as cited in Chibuike, 2000) which led to the establishment of Nigerian Deposit Insurance Corporation (NDIC) in 1988 (Chibuike, 2000; Hesse, 2007). Following the deregulation in the Nigerian banking system, bank licensing policy was liberalised which resulted in proliferation of banks and other financial institutions (Chibuike, 2000), this increased the number of banks from forty-two (42) in 1986 to one hundred and seven (107) in 1990 and increased to one hundred and twenty (120) by 1992 (Barros and Caporale, 2012). Most of the new banks which

emanated during this period were no more than *bureau de change* and the deregulation development made it possible for some of the banks to survive mainly by buying and selling foreign exchange (Chibuike, 2000). As such, this created risks and opportunities for the banks with increased competition. However, the increased number of banks during this era was not matched with corresponding large increase in supervisory and regulatory mechanism resulted in systemic failure (Barros and Caporale, 2012).

According to Lewis and Stein (1997), the systemic failure during this period was triggered by disintermediation as several of the new banks (commonly referred to as new generation banks) had a preference of making money through rent-seeking activities and arbitrage. This was possible due to the parallel exchange rate regime which enabled banks to earn profits from different arbitrage opportunities. Due to improved trade-related financing after the implementation of SAP and trade liberalization, banks with political elite connections usually had favoured access to exchange rate auctions and sold foreign the exchange at a high premium (Hesse, 2007). Therefore, the mobilisation and allocation of resources to needy sectors was jeopardised during the deregulation period (Barros and Caporale, 2012).

Progressively, in 1989, there was accumulation of bad debts by the twenty-five (25) banks owned by state government due to expansion of proprietary loans to state governments and borrowers with political influence (Brownbridge, 1996 as cited in Chibuike, 2000). Hence, the CBN Act of 1958 and Banking Decree of 1969 proved inadequate and were repealed which led to the promulgation of Bank and Other Financial Institution Act (BOFIA) in 1991 (Mamman and Hashim, 2014). With the new Act, the minimum capital of commercial banks and merchant banks were increased to ~~N~~50 Million and ~~N~~40 Million respectively, this was further augmented to ~~N~~2 Billion in 2001 (Alabede, 2012).

Furthermore, based on the low financial intermediation and high fragmentation experienced, some prudential measures were introduced through BOFIA in 1991 which caused a moratorium on issuing out new licences to banks (Hesse, 2007; Barros and Caporale, 2012). For instance, following the financial bubble burst<sup>12</sup> which

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<sup>12</sup> This is the Japanese Asset Price Bubble from 1986 to 1991. By late 1991, assets prices began to decline which led to huge accumulation of Non-performing Loans (NPL) causing challenges for several financial institutions.

caused sharp decline of stock market prices, the NDIC declared twenty-four (24) banks insolvent and twenty-six (26) banks were in serious trouble (Hesse, 2007). According to Lewis and Stein (1997) as cited in Hesse (2007), these fifty (50) banks comprised two-thirds of total banking assets and had three-quarters of deposits in the Nigerian financial system. As systemic banking failure occurred throughout the 1990s, the financial indicators of Nigeria remained historically fairly low and started to increase significantly after 2000 (Hesse, 2007).

In 1998, twenty-six (26) bank licences were retracted which reduced the number of banks from one hundred and fifteen (115) to eighty-nine (89). Despite the power change in Nigeria to a new civilian government regime in 1999 (Hesse, 2007), the remaining eighty-nine (89) banks were characterised with low capital base, poor asset quality, insolvency and illiquidity, high dependency on foreign exchange trading and public sector deposits, and weak corporate governance (Soludo, 2006 as cited in Barros and Caporale, 2012). This led to another phase of radical changes to the Nigerian banking industry which was the beginning of consolidated banking era. By January 2001, the Nigerian banking system was fully deregulated which led to the adoption of universal banking system as the banking operations of merchant banks were merged with commercial banks on a minimum capital base of ₦2 Billion in preparation for the consolidation regime in 2004 (Somoye, 2008). In addition to this, the risk-weighted capital ratio of Nigerian banks was increased from 8 per cent to 10 per cent (Odeleye, 2014).

#### **4.4.4. Consolidation Banking Era in Nigeria (2004 to 2009)**

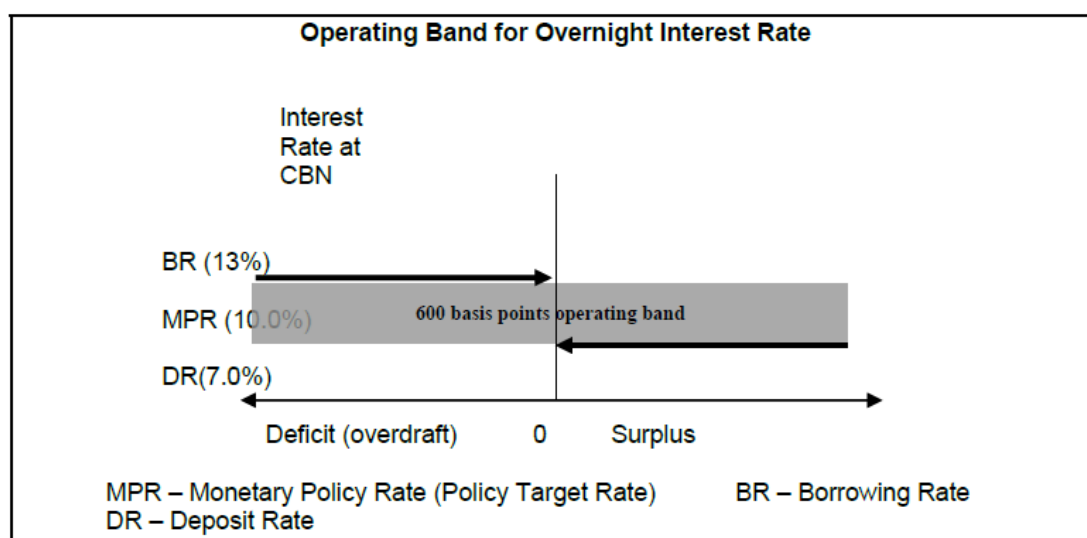
The consolidation era commenced with the 13-point reform agenda which was embarked upon by the CBN as corrective measures to address the fragile situation of the Nigerian financial system, prevent boom and burst cycle, and transform the banking system for Nigeria and regional economy (Somoye, 2008; Ogujiuba and Obiechina, 2011). Additionally, the consolidation regime was intended to enhance survival of Nigerian banks in international financial system (Somoye, 2008) and increase average size of banks, create new product development and economies of scale (Hesse, 2007).

As such, on July 4<sup>th</sup> 2004, the minimum capital requirement of Nigerian banks was increased to ₦25 billion from ₦2 billion effective from 31<sup>st</sup> December 2005 (Hesse, 2007; Somoye, 2008; Barros and Caporale, 2012; Odeleye, 2014). According to Zhao and Murinde (2009), when the new capital base requirement was announced, out of the eighty-nine (89) banks in Nigeria, about five (5) to ten (10) banks had existing capital base above the ₦25 billion, eleven (11) to thirty (30) banks had capital base within ₦10 billion to ₦20 billion; while the remaining fifty (50) to sixty (60) banks had capital base quite below ₦10 billion. Hence, the attempt of most banks in Nigeria to meet the new minimum capital requirement triggered the emanation of mergers and acquisitions in the banking system.

In line with the foregoing, Zhao and Murinde (2009) further highlights that the haunt of raising the required minimum capital requirement led banks to embark on trading on domestic capital market through foreign direct investment. This resulted in capitalisation increase of the Nigerian banking industry as a percentage of stock market capitalisation from twenty-four (24) per cent in 2004 to thirty-eight (38) per cent by 2006. Concurrently, there was a direct contribution to growth of market capitalisation and liquidity within 2005-2006 (Zhao and Murinde, 2009). At the commencement of 2006 which marked the start date of ₦25 billion new capital base requirement, only twenty-five (25) banks out of eighty-nine (89) were standing through regulatory merger and acquisition (Sanusi, 2010). These banks comprised of twenty-one (21) private publicly quoted banks, four (4) foreign banks, and no government-owned banks was standing (Hesse, 2007; Zhao and Murinde, 2009). Later, the number of banks were reduced to twenty-four (24) following market-induced merger and acquisition (Sanusi, 2010).

In December 2006, a new framework for monetary policy implementation was introduced by the CBN with the aim to fast track stability of interest rates (CBN, 2016). As such, the MRR was replaced with Monetary Policy Rate (MPR) which was initially set at 10.0 percent between upper bound of lending facility and lower bound of deposit facility, the entire corridor had a width of 600 basis points as shown in Figure 4.10. To date, the MPR remains a tool of the CBN which helps to control lending activities of commercial banks in Nigeria.

**Figure 4.10 Monetary Policy Rate (MPR) of CBN at Inception**



**Source: CBN (2019)**

However, the study of Somoye (2008) examines the pre and post-consolidation performance of banks and macro-economic performance of Nigeria using published audited accounts of twenty (20) banks out of the twenty-five (25) banks which emerged from consolidation. The study reveals that the consolidation programme in Nigeria has not significantly enhanced the aggregate performances of banks and contributed marginally to real sector growth for sustainable development. Additionally, the study of Ebimobowei and Sophia (2011) using explorative research method reveals that consolidation in Nigeria failed to achieve the required objectives of capital adequacy, liquidity and corporate governance which resulted to more turmoil among banks after consolidation.

According to CBN (2009), the major downside of the consolidation programme in Nigeria is the near entire neglect of compliance to good practice of corporate governance. This neglect was caused by executive management misleading banks in adherence to corporate governance and obtaining unsecured loans at the detriment of depositors, inadequate capacity to enforce good governance on bank management practices (CBN, 2009). Also, the consolidation regime was characterised with overbearing influence on board of banks by the Chairmen/Chief Executive Officers, lack of autonomy of some boards, failure to contribute significantly on development and growth of banks, unproductive board committees and feeble ethical standards (CBN, 2009).



Additionally, CBN (2009) asserts that numerous investments during this era were undertaken without considering associated risks resulting from lack of strong consumer protection tradition in Nigeria. Furthermore, these aforementioned problems were compounded by some problems such as: unclear and uncoordinated delegation of responsibilities on financial sector issues between the CBN and other government agencies, lack of full disclosure to the CBN by banks, absence of a framework to enhance consolidated examination of banks, weak supervision capacities of supervisory agencies, unfavourable business environment and underdeveloped infrastructure (CBN, 2009). Following the aforementioned issues of bank consolidation in Nigeria and the outcome of earlier highlighted studies of Somoye (2008) and Ebimobowei and Sophia (2011), there was a need for further reforms by the CBN to reposition the Nigerian banking industry for the future which led to the emergence of post-consolidation banking era in Nigeria.

#### **4.4.5. Post-Consolidation Banking Era in Nigeria (2009 till Date)**

Based on the precarious condition of Nigerian banks in the consolidation era, post-consolidation banking era commenced with diagnosis and initial stabilisation steps for the remaining twenty-four (24) banks. Following this reform, in June 2009, the CBN embarked on a three branched approach to examine the financial situation of the remaining twenty-four (24) banks. The first approach was the unique joint examination conducted by the CBN and the Nigerian Deposit Insurance Corporation (NDIC) into operational activities of existing banks (Sanusi, 2010). The outcome of this special investigation revealed that nine (9) banks out of the standing twenty-four (24) banks were in unstable condition due to inadequate liquidity ratios and capital asset ratios, weak risk management and corporate governance practices (Sanusi, 2010).

The second approach was to conduct a diagnostic audit by independent consultants which further revealed that the nine (9) banks were technically insolvent with considerable negative asset value. Against this backdrop, the CBN embarked on some measures to strengthen the Nigerian banking industry, restore public interest, and protect creditors and depositors. The initial measures undertaken by the CBN in conjunction with NDIC and Federal Ministry of Finance (MOF) was the injection of ₦620 billion into the nine (9) troubled banks; replacing the Chief Executive Officers and Board of Directors of eight (8) out of nine (9) banks (five on 14 August, 2009 and three more on 2 October, 2009) with competent managers; ensuring continuous liquidity of banks through local interbank market; and maintaining essential



correspondent banking relationships and restoring confidence of foreign creditors and correspondent banks (Sanusi, 2010).

The third approach became necessary with the inception of new management in the eight (8) banks as earlier highlighted. Hence, a detailed and independent management account audit of the banks was conducted. As such, the new managers took several actions under the guidance of the CBN to ensure improvement in operations and transparency. According to Sanusi (2010), measures undertaken by the banks include: improvement of non-performing loan ratios through loan recovery, avoiding irrelevant costs; reduction of cost to income ratio, de-risking and de-leveraging liquidity management and balance sheet.

In line with the ongoing, it can be deduced that these three approaches enabled the nine (9) troubled banks to continue normal banking operations and prevented the Nigerian banking sector from collapsing. After the diagnosis and initial stabilisation steps as earlier discussed, long term reform measures were considered by the CBN. The view of Sanusi (2010) affirms that the focus of these measures is to ensure that the Nigerian financial system contribute to growth of real sector in the economy. As such, it can be deduced that the CBN aims to promote a bank-based financial view and enhance finance-led growth or supply-leading hypothesis with its measures. In this regard, the post-consolidation banking era in Nigeria continued with the CBN undertaking further reforms initiated in 2009 which was tagged “The Project Alpha Initiative”.

This new banking initiative by the CBN was built around four pillars ('Es'). The first pillar is based on enhancing quality of banks through risk-based supervision to ensure good corporate governance, enhanced degree of disclosure, people development and stronger information management (CBN, 2009; Sanusi, 2010). According to CBN (2009), enhancing quality of banks is focused mainly on addressing governance issues in the Nigerian banking industry. As such, the CBN established an Enterprise Risk Assessment Process and Nigerian Capital Adequacy modelled on ICAAP (UK) and COSO (US) to ensure best practices of governance in the industry (CBN, 2009; Sanusi, 2010). The second pillar is based on establishing financial stability through establishment of a hybrid monetary policy and macro-prudential rules, ensuring counter-cyclical fiscal policy, development of directional economic policy, and enhancing alternative source of finance through further development of the capital market (CBN, 2009; Sanusi, 2010).

The third pillar is based on enabling healthy financial sector evolution by ensuring a competitive banking industry to improve cost structure of banks, address credit bureaux and registrars, reduce an informal economy and ensure a reliable and secure payments system (CBN, 2009; Sanusi, 2010). A key initiative to this pillar is the establishment of AMCON on 19 July 2010. AMCON was established as a main tool to stabilise and re-vitalise the Nigerian financial system by efficiently resolving non-performing loan assets of banks (AMCON, 2019). The last pillar is based on ensuring that the financial sector contributes to the economy through foreign direct investment, public-private partnerships, development finance and venture capital (CBN, 2009; Sanusi, 2010).

According to Sanusi (2010), these pillars in the post-consolidation era have succeeded in ensuring macroeconomic and financial system stability in Nigeria. However, there are some weaknesses which remained in Nigeria such as conflict between monetary and fiscal policy, insufficient economic diversification, inadequate infrastructure, high security risks, high lending interest rate and increase government expenditure and borrowing with potential crowding out effects on the private sector (CBN, 2009; Sanusi, 2010). In line with this, it can be deduced that the initiatives in the post-consolidation era has helped to revive the Nigerian banking industry from problems that emanated in the era of consolidation. However, it is essential for the CBN to ensure continuous implementation of the initiatives with possible improvements in order to maintain financial stability against future national or global financial crisis.

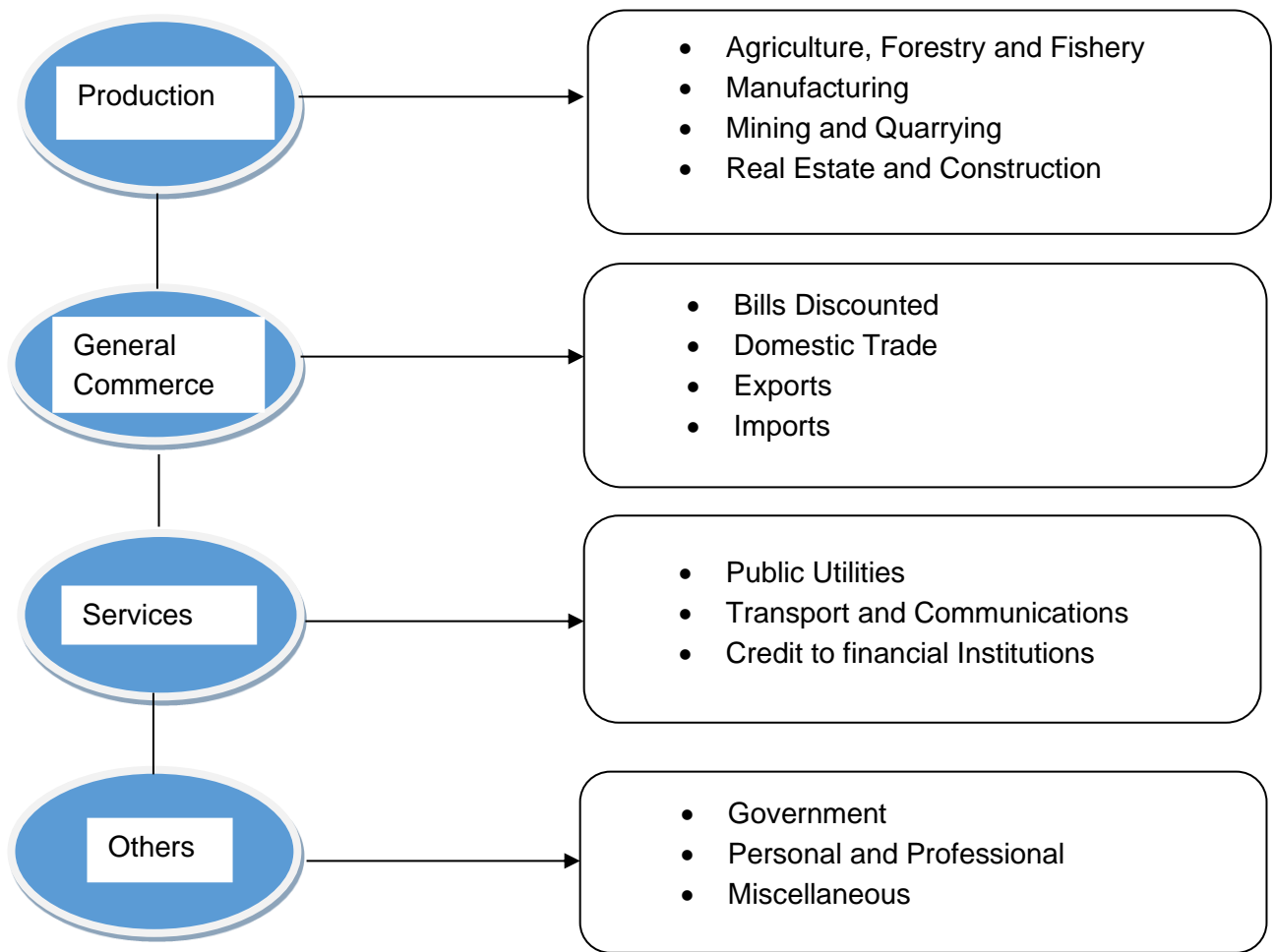
Be that as it may, the Nigerian banking industry had a recent experience on 21 September 2018 when the CBN announced the takeover of Skye Bank and revoked the operating licence of the bank. This initiative was a follow-up from 4 July 2016 when the management of Skye bank was replaced following persistent breach of liquidity thresholds (Alake, 2018; Udo, 2018) which revived memories of the global financial crisis (Alake, 2018). Afterwards, the performance of Skye Bank improved but urgent recapitalisation was required. As such, the CBN in consultation with NDIC transferred the assets and liabilities of Skye Bank to a newly licensed bridge bank called Polaris Bank on 21 September 2018.

To address the issue of recapitalisation, AMCON was mandated by the CBN and NDIC to stabilise Polaris bank by injecting ₦786 billion into the bank to ensure its net value becomes zero (Vanguard, 2018). Under this new arrangement, customers of Skye bank automatically became customers of Polaris bank and normal banking services continued with Polaris Bank on 24 September 2018. Following the intervention of the CBN on Skye bank in 2016 and 2018, it can be deduced that the new four pillars banking initiative of the CBN has been effective in promoting stability. Additionally, it can be further deduced that the initiatives have been effective in ensuring the Nigerian banking industry remains safe and resilient. According to CBN (2019), as at 1 January 2019, there are currently twenty-one (21) commercial banks operating in Nigeria under the governance of the CBN (See appendix A for list of commercial banks).

#### **4.5 Economic Sectors in Nigeria**

In an economy, there are three main economic sectors: primary, secondary and tertiary. The classification of economy into the aforementioned three sectors was first formalised in the pioneer study of Fisher (1935) to acknowledge progress of material from transfer of resources between different production lines. As such, Fisher (1935) accentuates that material progress involves expansion of 'tertiary industries' (the units that provide luxuries, amusements) at the expense of 'secondary' (mass-manufacturing) and 'primary' (extractive) industries. Nigeria is a multi-ethnic and culturally diverse country, with abundance resources and different economic sectors which contributes to economic growth in different proportions as shown in Figure 4.11.

**Figure 4.11: Sectoral Classification of the Nigerian Economy**



**Source: Author's Compilation (2018) from CBN Statistical Bulletins**

#### **4.5.1 Production Sector**

Following the economic classification of Fisher (1935), the production sector in Nigeria which involves extraction of raw materials can be regarded as the primary economic sector. The production sector measures the aggregate output of organisations involved in an economy's industrial sector. In Nigeria, the industrial production sector has an average growth rate of 0.96 percent between 2007 and 2017, with an all-time high record growth rate of 20.10 percent in 2011Q1 and a record low growth rate of -20.40 percent in 2016Q1 (Trading Economics, 2018). The production sector comprises of agriculture, forestry and fishery, manufacturing, mining, and quarrying, real estate and construction as shown in Figure 4.11. According to Balouga (2009), the major source of income in the production sector is mining and quarrying which comprises of oil and natural gas- the segment which the Nigerian economy hugely depends on.

#### 4.5.1.1 Mining and Quarrying

Oil boom in Nigeria was discovered by Shell BP in 1956 at Oloibiri, Niger Delta after exploring for half a century. Two years later oil discovery, Nigeria joined the ranks of oil producers in 1958 after producing 5,100 bpd (NNPC, 2018). After independence in 1960, exploration rights in offshore and onshore regions in Niger Delta were further extended to other foreign organisations. After the end of Biafran war in 1970, the economy was able to generate instant riches from its oil production resulting from increase in world oil price, with a production level of 2million barrels a day in late sixties and early seventies (NNPC, 2018). As such, Nigeria was able to join OPEC in 1971 and established Nigerian National Petroleum Company (NNPC) in 1977- NNPC is a main player in both downstream and upstream sectors owned and controlled by the federal government.

According to NNPC (2018), production figures of oil in Nigeria dropped in the eighties following economic slump. In this regard, oil production level in Nigeria has been responding to fluctuation in oil price and economic cycle. After discovery of oil in Nigeria, petroleum production and export has been playing a dominant role in the economy as it accounts for about 90 percent of the gross earnings. As such, the role of agriculture and other traditional sectors of the economy have been neglected. The natural gas reserves as a component of mining and quarrying are well over 5 trillion m<sup>3</sup> and are numerous times as significant as crude oil reserves (GECF, 2016). In Nigeria, the largest natural gas operator is Nigerian Liquefied Natural Gas Company which commenced exploration and production in 1999. Currently, several efforts are being made in Nigeria to utilise plentiful reserves of related gas while preventing flaring, this is as a result of saturation of Nigerian oil fields with primary gas caps (GECF, 2018).

In Nigeria, minerals also provide a huge segment of the national income, with coal and tin ore being the first mining products for export of the economy (Obasanho, 2018). Since 1904, the Nigerian economy has been mining tin ore and cassiterite by private companies in Jos, Plateau state and mining of coal in Enugu under the control of the federal government. However, coal production fell into decay with the conversion of railways to diesel fuel and emergence of more environmentally friendly and cheaper petroleum products. As part of the economic diversification priority on the ongoing ERGP program, Nigeria is seeking to invest \$7Billion in the mining industry by developing extraction of gold and iron ore in the production sector (Doya, 2016).

The mining and quarrying sector comprises of crude oil and natural gas, metal ore, coal mining, and quarrying and other minerals sub-activities. In a recent report of National Bureau of Statistics (2018), mining and quarrying sector grew nominally by 54 percent, year on year. In this sector, crude oil and natural gas is the highest contributor with a weight of 98.61 percent. However, quarrying and other minerals has the highest growth rate during 2018Q2 with 56.60 percent, while crude oil and natural gas growth rate was at 54.07 percent.

Comparing these to the growth rates recorded in 2018Q1 and 2017Q2, the sector has dropped significantly by -30.20 percent and -98.17 percent respectively. This drop is attributed to activities suspension on the Nembe Creek trunk line which is one of the key pipelines often used for the transportation of Bonny Lite crude oil for exports during May 2018 (National Bureau of Statistics, 2018). In 2018Q2, mining and quarrying sector contributed 12.32 percent to overall nominal GDP higher than the contributions of 9.08 percent in 2017Q2 but lower than 2018Q1 by 13.92 percent.

In real terms, mining and quarrying sector increased by -3.84 percent, year-on-year in 2018Q2. Comparing this to 2017Q2 and 2018Q1, the value is lower by -7.34 percent and -18.68 percent respectively as shown in Figure 4.12. As such, the real growth rate of the sector quarter on quarter is recorded at -7.35 percent. Mining and quarrying sector contributes 8.71 percent to real GDP in 2018Q2; this contribution is 9.19 percent and 9.67 percent lower than 2017Q2 and 2018Q1 respectively.

**Figure 4.12: Real Mining and Quarrying Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**

Before the oil boom in Nigeria, the economy thrived on agriculture as the mainstay of the economy as it provided employment and food for the populace and generated foreign exchange earnings and revenue for the government. As such, national attention shifted to oil and gas sector shortly after then boom in 1956. Nonetheless, agriculture remains an essential sector in the Nigerian economy as it employs about 70 percent of labour force in the economy (All Africa, 2014). According to LBS (2017), agriculture sector in Nigeria faces several challenges: outdated land tenure system which limits access to land, high cost of farm inputs, low irrigation development, limited adoption of technologies and research findings, inefficient procurement and distribution of fertilizer, poor accessibility to credit, high post-harvest waste and losses, poor accessibility to market and inadequate storage facilities.

#### **4.5.1.2 Agriculture, Forestry and Fishery**

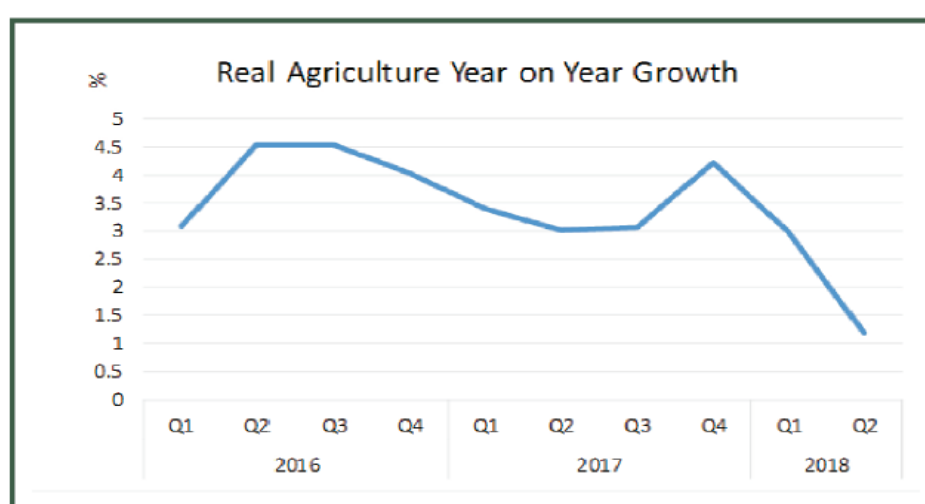
Prior to the discovery of crude oil in Nigeria in 1956, agriculture was the backbone of the Nigerian economy and major source of the country's foreign exchange earnings (Okotie, 2018). Before 1956, the main exports are cash crops such as rubber from Delta State; hide, skin and groundnut in the Northern region; coffee and cocoa from the western region; kernels and palm oil from the Eastern region (Okotie, 2018). According to Chigbu (2005), agriculture provided employment for about 30 percent of the population, 80 percent of export earnings in Nigeria, 65 percent of aggregate GDP output by employment, and about 50 percent of government revenue.

Agriculture sector in Nigeria comprises of crop production, livestock/animal production, fishery and forestry. Crop production focuses on growing crops, plants, vines, and their seeds mainly for food and fiber. Animal production deals with raising animals or animal products in farms and ranches, mostly by Fulani cattle herdsman located in the northern region of the country (LBS, 2017). This sub-sector raises animals for the products they produce, or to be sold eventually. However, livestock/animal production is constrained by lack of processing facilities, low productive breeds, inadequate access to grazing lands and feeds, regular conflicts among farmers, low technical input in animal management (LBS, 2017). Forestry deals with legal growing and harvesting of timber on a long production cycle, while fishery is concerned with harvest of fish and other aquatic animals. Fishery contributes about 3 to 4 percent to the country's GDP annually. In 2017Q3, agriculture contributed 24.4 percent to GDP from 24.11 percent and 19.28 percent in 2016Q3 and 2017Q2 respectively (LBS, 2017).

On average, agriculture sector recorded a growth of 10.64 percent in year-on-year, indicating a decline of 1.89 percent in comparison to 2017Q2. However, this showed an increase of 4.84 percent in comparison to 2018Q1 which recorded a nominal growth rate of 5.80 percent (National Bureau of Statistics, 2018). In the sector, crop production remains the key driver of the sector with a contribution of 92.06 percent to aggregate nominal growth of the sector. During 2018Q2, agriculture sector accounted for a contribution of 18.78 percent to nominal GDP, in comparison to a contribution of 19.28 percent and 17.42 percent in 2017Q2 and 2018Q1 respectively (National Bureau of Statistics, 2018).

In real terms, growth of agriculture sector was recorded at 1.19 percent year on year, a decrease of 1.82 percent and 1.81 percent in comparison to 2017Q2 and 2018Q1 as shown in Figure 4.13. Agriculture sector contributed 22.86 percent to aggregate real GDP in 2018Q2, higher than the contribution of 21.65 percent in 2018Q1 and lower than the contribution of 22.93 percent in 2017Q2. According to FSDH Research (2018), agriculture is expected to be a driver of the Nigerian economy within the period 2018 to 2022 due to attraction of more investments from private sector operators and government partnerships. Additionally, the sector is forecasted to supply the required raw materials to the manufacturing sector and replacing imported food to the nation (FSDH Research, 2018). Furthermore, the favourable weather conditions and soil is expected to support growth in agriculture sector within 2018 to 2022 (FSDH Research, 2018).

**Figure 4.13: Real Agriculture Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**



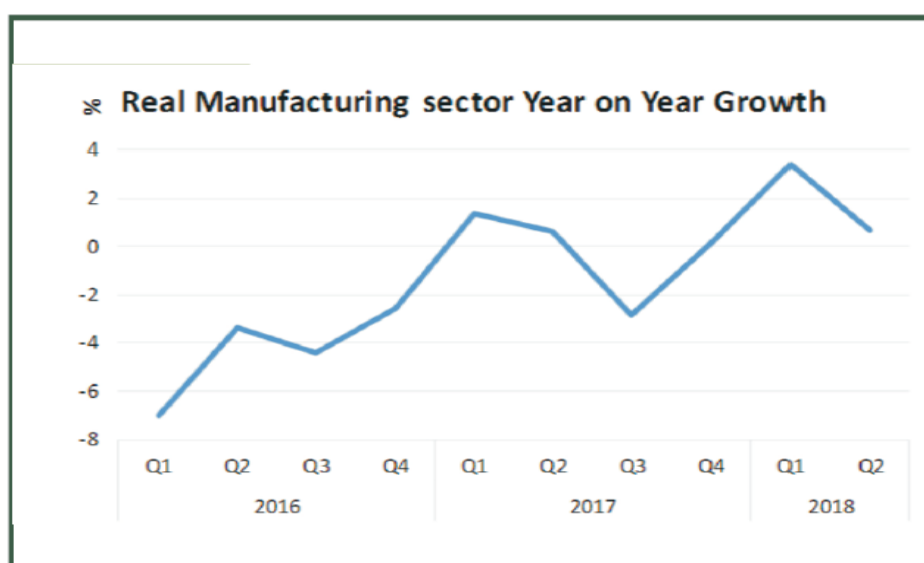
#### 4.5.1.3 Manufacturing

For manufacturing sector, the over reliance on oil has significantly reduced production in the sector during the 1990s and 2000s (Sanni, 2018). During this period, most of the manufacturing companies in Nigeria lacked competitive efficiency and were not export oriented (Ume et al., 2017; Sanni, 2018). As such, the competitive manufacturing companies in Nigeria during this period relocated their factories abroad (Ekundayo, 2018). In this regard, few main industries such as cement, beverages, tobacco and textiles have kept the sector afloat while operating at half capacity (Oladipo et. al., 2019). To this day, production in the manufacturing sector is primarily located in Lagos and its borders, and to some other commercial towns in Kaduna and Kano (Ume et. al., 2017).

Manufacturing activities in Nigeria are governed by Manufacturers Association of Nigeria (MAN) which was established in May 1971. The establishment of MAN was geared towards providing a platform for the private sector to devise and express policy suggestions to compliment policy formulation of the government (MAN, 2017). Manufacturing activities in Nigeria comprises of: cement; basic metal, iron and steel; motor vehicles and assembly; wood and wood products; electrical and electronic; textile, apparel and footwear; food, beverages and tobacco; pulp paper and paper products; oil refining; non-metallic products, plastic and rubber products; chemical and pharmaceutical products; and other related activities (Ume et al., 2017; Sanni, 2018).

According to National Bureau of Statistics (2018), year-on-year nominal growth of the manufacturing sector during 2018Q2 was recorded at 19.52 percent. In comparison to 2017Q2 and 2018Q1 which recorded 15.97 percent and 10.59 percent respectively. The sector's quarter-on-quarter growth is 10.45 percent with a contribution of 9.49 percent to overall nominal GDP in 2018Q2, a higher contribution in comparison to 2017Q2 and 2018Q1 which recorded 9.02 percent and 9.27percent respectively (National Bureau of Statistics, 2018). On the other hand, the manufacturing sector recorded a 0.68 percent year-on-year real growth, a 0.04 percent increase and a decrease of 2.71 percent in comparison to 2017Q1 and 2018Q2 respectively as shown in Figure 4.14. Quarter-to-quarter growth rate of the sector is -3.51 percent with 9.29 percent contribution to real GDP in 2018Q2 (National Bureau of Statistics, 2018).

**Figure 4.14: Real Manufacturing Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**

The recent report by FSDH Research (2018) forecasts a further boost as macroeconomic indicators show customer confidence and renewed business within the Nigerian economy in the forthcoming years. As such, the manufacturing sector has the potential to generate employment opportunities by employing large number of people (FSDH Research, 2018).

#### **4.5.1.4 Real Estate and Construction**

The real estate and construction sector in Nigeria is two-sided; interesting and challenging. On the one hand, the sector is interesting due to the huge and several socioeconomic prospective embedded in the sector (Olofinji, 2017). On the other hand, the sector is challenging in Nigeria due to the numerous tasks required to successfully exploit, unlock and release such economic prospective in the Nigerian housing sector (Olofinji, 2017). Additionally, Olofinji (2017) accentuates that from independence, the initiative of the government in the housing sector has been in form of budgetary allocations which has not been productive due to neglect of housing and mortgage finance.

Following the economic recession in 2016, private and public investment in the Nigerian construction sector real estate building declined. However, the sector indicated signs of stronger growth in 2017Q1 but declined as the sector has been characterised with high demand and relatively limited supply (Oxford Business Group, 2018). For real estate, growth rate in 2018Q2 was recorded at -3.88 percent with

quarter-on-quarter growth of 24.70 percent, real estate contributed 6.83 percent to real GDP in 2018Q2 (National Bureau of Statistics, 2018).

For construction, the growth rate was recorded at 7.66 percent year-on-year in 2018Q2, with an increase of 7.54 percent recorded in 2017Q2 as shown in Figure 4.15. The construction sector has a quarter-on-quarter growth of 14.92 percent in real terms with a contribution of 4.51 percent to real GDP in 2018Q2, in comparison to 4.24 percent contribution in 2017Q2. According to FSDH Research (2018), the real estate and construction sector is expected to boost during the period 2018 to 2022 following initiatives of the federal government to run a partnership with private sector in developing infrastructure in the economy. Additionally, foreign exchange stability and growth in stock market are expected to boost the activities of the sector (FSDH Research, 2018).

**Figure 4.15: Real Construction Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**

#### **4.5.2 General Commerce Sector**

In Nigeria, the general commerce sector focuses on trading activities of the economy. The objective of trade policy in Nigeria is to promote and provide diversification for its exports, through enhancing national competitiveness and encouraging liberalisation by reducing subsidies (Santander, 2018). Nonetheless, the reduction in oil prices hampered efforts of diversification. To enhance the activities of the general commerce sector, Nigeria has signed trade agreements with countries in different continents such as Africa, the European Union, the Pacific and the Caribbean. The Nigerian

Office for Trade Negotiations (NOTN) was established on 10<sup>th</sup> May 2017 to help the Federal Government diversify the economy through enhancing and expanding trade relations across the borders. This will further help the Nigerian economy to build a buffer against exogenous shocks in the future (NOTN, 2018).

#### 4.5.2.1 Trade

According to Santander (2018), trade accounted for 20 percent of the country's GDP in 2015. In 2018Q1, the total value of Nigeria's trade was ₦7.21 trillion, an increase from ₦6 trillion in 2017Q4 resulting from increase in export. Additionally, trade balance increased by 20.95 percent in 2018Q1 to a surplus of ₦2.17 trillion in comparison to 2017Q4, and 221 percent from ₦677 billion in 2017Q1. The trade balance figure recorded in 2018Q1 is the first quarter in two years Nigeria recorded a trade balance of over ₦2 trillion (Adeyemo, 2018). In 2017Q3, 14 percent of Nigerian workforce (about 10.8 million people) was engaged in trading while the sector accounts for 18 percent of GDP (NOTN, 2018).

Over the years, the Nigerian economy has focused mainly on international trade at the detriment of domestic trade. As such, the growth of domestic trade in Nigeria has been limited by poor infrastructure, widespread corruption, and fraud. In response to this, the Nigerian government has developed strategies to resolve the issues facing domestic trade in the country to facilitate growth and development of the sector. Such strategy will involve partnering traders and other regional organisations in ensuring provision of domestic trade with the aim to facilitate growth (Ojo, 2014). According to FSDH Research (2018), it is projected that between 2018 to 2022, the rising purchasing power of consumers in Nigeria will aid to boost activities in the trade sector, with the support of the finance sector in helping the sector maximise its potentials. Additionally, potential stability in exchange rate should help to augment trading margins (FSDH Research, 2018).

In real terms, growth rate of trade in 2018Q2 was recorded at -2.14 percent, a 0.43 percent increase from 2018Q1 and reduction by 0.53 percent in comparison to 2017Q2 as shown in figure 5.6. Quarter-to-quarter growth in the sector is -0.69 percent, with a contribution of 16.45 percent to real GDP in 2018Q2 lower than contributions of 17.06 percent and 17.07 percent in 2018Q1 and 2017Q2 (National Bureau of Statistics, 2018).

**Figure 4.16: Real Trade Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**

#### **4.5.2.2 Exports**

Nigeria is endowed with different natural resources; however, the performance of its exports is monotonous due to consistent dominance of oil as a major source of export (Charles, Mesagan and Saibu, 2018). The study of Eregha and Mesagan(2016) argues that the availability of abundant resources in African countries is a curse rather than a blessing. This argument is based on the assertion that oil-dependent African countries have continuously failed to transmute their huge oil earnings as a source of funding for productive sectors which have positive impact on the economy (Eregha and Mesagan, 2016). According to Trend Economy (2019), the top export destinations of commodities from Nigeria are: India (15.4%), Spain (9.91%), Netherlands (9.07%), Ghana (7.46%), France (6.62%), South Africa (5.87%), USA (5.26%), Italy (3.96%), China (3.1%), and Indonesia (2.75%).

Additionally, the exports structure of commodities from Nigeria in 2019 include: mineral fuels, oils, waxes and bituminous substances (87%); ships, boats and other floating structures (5.93%); miscellaneous articles of base metal (3.91%), cocoa (0.58%), seeds, grains, plants and fruits (0.559%), fertilizers (0.283%), edible fruits and nuts (0.21%), tobacco (0.193%), raw hides and skins (0.14%), spacecraft and aircraft (0.13%) (Trend Economy, 2019). Hence, crude oil constitutes the largest export in Nigeria. Based on the monotonous dominance of oil in Nigeria since independence in 1960, there is an increasing attention of scholars and policy makers

on the need for a diversified economy, which is one of the proposed outcomes of Economy Recovery and Growth Plan (ERGP). According to Aditya and Acharyya (2015), a diversified export basket would enhance stability of export earnings. Also, diversified economy would aid creation of employment and quality institutions, and allocation of resources which could foster economic growth and development (Albassam, 2015).

The aggregate value of Nigeria's exports amounted to ~~N~~4.69 trillion in 2018Q1; representing a 20 percent from ~~N~~3.91 trillion in 2017Q4 and 56 percent increase from ~~N~~3 trillion in 2017Q1 (Olowookere, 2018). In 2018Q1, agriculture contributed ~~N~~73.24 billion to aggregate export value representing a 63.84 percent from 2017Q4 (Adeyemo, 2018). Additionally, raw materials and solid materials contributed to aggregate export with ~~N~~32.70 billion and ~~N~~26.92 billion respectively during 2018Q1. Total value of energy goods and manufactured goods to export was ~~N~~10.39 billion and ~~N~~434.37 billion respectively during 2018Q1. As an oil-dependent economy, exports of crude oil was valued at ~~N~~3.58 trillion, representing the major contributor to aggregate value of exports in Nigeria.

The value of crude oil to aggregate export increased by 10 percent from ~~N~~3.25 trillion recorded in 2017Q4 and 50.74 percent increase from the value of ~~N~~2.3 trillion recorded in 2017Q1. In addition to this, other oil products contributed a value of ~~N~~535.8 billion to aggregate export during the period 2018Q1. During this quarter (2018Q1), the principal trading partners with Nigeria were Netherlands with a portion of 20.5 percent, India with 18.2 percent of aggregate export, Spain with a share of 8.3 percent, while United States of America and France have 8.2 percent and 6.3 percent respectively (Adeyemo, 2018).

#### **4.5.2.3 Imports**

The trend of imports in Nigeria has been increasing since independence in 1960 (Koginam and Ekiye, 2020). Particularly, Koginam and Ekiye (2020) asserts that the increasing trend in imports of capital and consumption in Nigeria can be related to the need for improved welfare and industrialisation. Hence, import has been a way to expand the varieties of goods available to domestic consumers, it helps to provide positive competitive pressures on the domestic economy and could foster standardisation (Ojide and Ojide, 2014). Additionally, the view of Nteegah and Mansi (2017) asserts that imports in Nigeria has been useful in the reduction of shortage in the provision of important commodities to poor households.

According to the statistics of Trend Economy (2019), the trading partners which are sources of import in Nigeria are: China (25%), India (12%), USA (9.87%), Netherlands (7.37%), Belgium (5.01%), Swaziland (3.28%), Germany (3.07%), United Kingdom (2.83%), United Arab Emirates (2.53%), and Korea (2.14%). Additionally, the structure of imports to Nigeria in 2019 comprise of machinery and mechanical appliances, and nuclear reactors (18.9%); mineral fuels, oils and waxes; bituminous substances (15.5%); other vehicles besides tramway or railway (11.8%); electrical machinery and related appliances (7.83%); optical, cinematographic, photographic and related accessories (7.08%); plastics and related materials (3.23%); glass and glassware (3.18%); pharmaceutical products (3.06%); cereals (2.74%), and iron or steel articles (2.12%) (Trend Economy, 2019).

For imports, the aggregate value for 2018Q1 was ₦2.51 trillion, a 19.22 percent increase from the value of ₦2.1 trillion in 2017Q4 and 8.04 percent higher than the value of ₦2.3 trillion in 2017Q1 (Adeyemo, 2018). Agriculture and raw materials contributed ₦184.49 billion and ₦284.81 billion to aggregate import respectively in 2018Q1. Other oil products and manufactured goods represent the principal contributors to aggregate import with ₦846.31 billion and ₦1.1 trillion respectively in 2018Q1. Additionally, energy goods accounted for ₦32.4 million, and solid materials amounted to ₦12.62 billion during 2018Q1. As such, the major import trading partners of Nigeria during this period were China with a proportion of 21.1 percent; Netherlands with a share of 12.1 percent, Belgium represents 10.6 percent, while USA and India have 6.5 percent and 6.3 percent respectively (Adeyemo, 2018).

#### 4.5.3 Services Sector

According to OECD (2008), the service sector is a vital component of any economy as it aids a direct and significant contribution to GDP and employment. Several services are main inputs to most other businesses in an economy. For instance, financial services which enhance transactions and provide access to finance for investment purposes, health services which enhance a healthy workforce, education services which enhance a well-trained workforce, legal and accountancy services which form an institutional framework to underpin a healthy market economy (Okotie, 2018; Oladipo et al., 2019). In line with the ongoing, the study of Ehigior (2017) reveals that the services sector in Nigeria has significantly contributed to GDP, trade and capital imports, and employment in the country within the last 15 years.



#### **4.5.3.1 Public Utilities**

This sub-sector includes activities such as human health and social services, education, administrative and support services (Onokala and Olajide, 2020). For human health and social services, the sector recorded a year-on-year real growth of 0.41 percent in comparison to -0.96 percent in 2017Q2 (National Bureau of Statistics, 2018). Quarter-on-quarter, the sector grew by 5.42 percent, with a contribution of 0.72 percent to real GDP in 2018Q2 which was also recorded in 2017Q2, and an increase from 0.70 percent recorded in 2018Q1 (National Bureau of Statistics, 2018). For education, real growth of the sector was recorded at -0.67 percent in 2018Q2 in comparison to -1.34 percent recorded in 2017Q2 and 0.45 percent recorded in 2018Q1.

Education sector contributed 1.79 percent to real GDP as at 2018Q2 in comparison to 1.83 percent and 2.15 percent recorded in 2017Q2 and 2018Q1 respectively (National Bureau of Statistics, 2018). Furthermore, administrative and support services recorded a year-on-year growth rate of -3.41 percent in 2018Q2, a decrease of -1.80 percent points and -2.89 percent points in comparison to 2017Q2 and 2018Q1 respectively. Administrative and support services recorded a year-on-year real growth rate of -3.41 percent, with a quarter-on-quarter real growth rate of 0.51 percent in 2018Q2. The sector contributed 0.02 percent to real GDP similarly to 2017Q2 and 2018Q1.

#### **4.5.3.2 Transport and Communication**

In Nigeria, the contribution of the transport system remains unsatisfactory which constitute huge challenge for economic growth in developing economies (Okotie, 2018; Sanni, 2018). In Nigeria, six activities make up transportation and storage sector: rail transport, road transport, air transport, post and courier service, water transport and transport services. According to Onokala and Olajide (2020), road transport in Nigeria is overuse, and rail transport has been heavily used in the past. However, waterways possess a lot of capacity which are not utilised. However, problems of road transport in Nigeria are environmental problems and high frequency of road traffic accidents on the roads in Nigeria.

Additionally, there are inefficiencies in Nigerian ports which have led to several missed opportunities for imports in the country through the seaports (Onokala and Olajide, 2020). In real terms, transport and storage recorded a growth of 21.76 percent in 2018Q2, with a quarter-on-quarter growth of -10.43 percent. The transport



and storage sector contributed 1.30 percent to real GDP in 2018Q2, increase from 1.09 percent recorded in 2017Q2 but lower than 1.50 percent recorded in 2018Q1 (National Bureau of Statistics, 2018).

For information and communication, there are four different activities in this sector: motion picture, publishing, broadcasting, and sound recording and music production. According to ITA (2020), Nigeria is Africa's largest information and communications market with 82% of telecoms subscribers, and 29% of internet usage. In 2018Q2, the sector recorded a real growth of 11.81 percent, year-on-year which was an increase of 12.96 percent in comparison to 2017Q2 as shown in Figure 4.17.

The quarter-on-quarter growth rate of the sector is 13.02 percent, with a contribution of 13.63 percent to overall real GDP in 2018Q2 in comparison to 2017Q2 and 2018Q1 with contribution of 12.37 percent and 12.41 percent accordingly (National Bureau of Statistics, 2018). With internet service providers and Global System for Mobile Communications (GSM) dominating the sector, it is forecasted that there will be an adjustment to tariff which will attract investments within the period 2018 to 2022 (FSDH Research, 2018). Additionally, as the adoption of technology increases in the Nigerian economy, the telecommunications sector is expected to boost within 2018 to 2022.

**Figure 4.17: Real Information and Communication Sector Year-on-Year Growth**



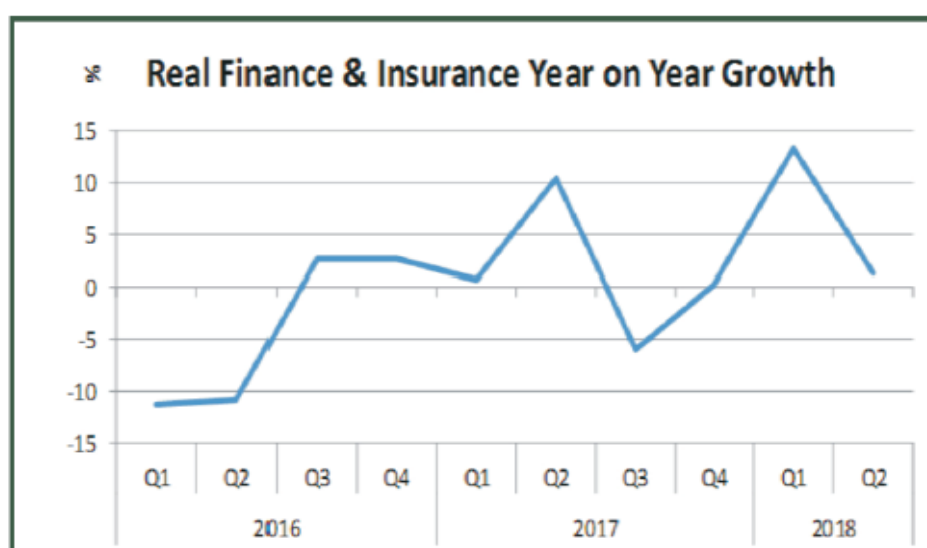
**Source: National Bureau of Statistics (2018)**

#### 4.5.3.3 Financial Institutions

Financial institutions in Nigeria comprise of regulatory and supervisory authorities, development finance institutions and other financial institutions (Ndugbu et al., 2015). As in the case of other countries, financial institutions in Nigeria are financial intermediaries that engage in mobilisation of funds from the savings surplus units to the deficit units (Ighoroje and Egedi, 2015). There are two main classes of financial institutions in Nigeria: banks and non-banks financial institutions (NBFIs), which complement each other in the intermediation process (Ndugbu et al., 2015). On the one hand, banks are saddled with the responsibility of accepting deposits and safe keeping valuables.

On the other hand, NBFIs are financial institutions without full banking licence to accept deposits. However, NBFIs provide alternative financial services through venture capitalists, contractual savings, investment intermediaries and microloan organisations (Rateiwa and Aziakpono, 2017). In 2018Q2, the sector recorded a growth of 1.28 percent, a decrease of 9.18 percent and 12.03 percent in comparison to 2017Q2 and 2018Q1 respectively as shown in Figure 4.18. The sector has a real quarter-on-quarter growth -3.80 percent, with a contribution of 3.31 percent to real GDP in comparison to 3.32 percent and 3.55 percent recorded in 2017Q2 and 2018Q1 respectively.

**Figure 4.18: Real Financial Institutions Sector Year-on-Year Growth**



**Source: National Bureau of Statistics (2018)**

#### 4.5.4 Others

This sector includes other possible sectors within the Nigerian economy which can be classified as government, personal and professional and miscellaneous (Ume et al., 2017). For personal and professional, it includes activities such as professional, scientific and technical (National Bureau of Statistics, 2018). The sector recorded a real growth of 2.07 percent in 2018Q2 which is an increase of 3.78 percent and 4.42 percent in comparison to 2017Q2 and 2018Q1 (National Bureau of Statistics, 2018). As at 2018Q2, the sector grew by 5.36 percent quarter-to-quarter with a contribution to real GDP of 3.59 percent during the period. This contribution is higher than 3.57 percent and 3.51 percent contributed in 2017Q2 and 2018Q1 respectively.

For government, public administration sector recorded a growth rate of -5.21 percent year-on-year in 2018Q2, and a quarter-on-quarter growth of 6.00 percent in 2018Q2. Public administration contributed 2.29 percent to real GDP in 2018Q2, higher than 2.23 percent recorded in 2018Q1 and lower than 2.45 percent in 2017Q2. According to the recent report of National Bureau of Statistics (2018), activities on miscellaneous can be classified as: electricity, gas, steam and air conditioning (with a contribution of 0.47 percent to real GDP in 2018Q2); accommodation and food services (with a contribution of 0.64 percent to real GDP in 2018Q2); arts, entertainment and recreation (with a contribution of 0.23 percent to real GDP in 2018Q2); and other services (with a contribution of 3.16 percent to real GDP in 2018Q2 in comparison to 3.13 percent and 4.21 percent recorded in 2017Q2 and 2018Q1 respectively).

#### 4.6 Sectoral Contribution to Real GDP

According to FSDH Research (2018), the overall contribution of economic sectors to real GDP in the Nigeria is shown in Table 4.5 based on actual values for 2016, estimated values for 2017 and forecasted values for 2018 to 2022. Table 5.1 shows that agriculture has the highest contribution to real GDP based on actual, estimated and forecasted values, with an average of 24.94 percent. This shows that agricultural activities still have significant contribution on the Nigerian economy despite the high reliance on oil and neglect of the agricultural sector by the Nigerian government (Okotie, 2018).

The other top contributors on real GDP in Nigeria are Trade; information and communication; mining and quarrying; manufacturing and real estate with average contributions of 16.75 percent, 11.06 percent, 9.76 percent, 9.47 percent and 6.98 percent, respectively. In 2016, the actual contribution of 8.48 percent by mining and

quarrying to real GDP is associated to the drop in crude oil prices which pushed Nigeria into recession in 2016Q1.

On the other hand, administrative and support services show the least contribution to real GDP based on actual, estimated and forecasted values, with an average of 0.02 percent. This is followed by water and waste management; arts and entertainment; electricity and gas supply; human health and social services; and accommodation and food services with average contributions of 0.19 percent, 0.27 percent, 0.37 percent, 0.71 percent and 0.96 percent. Overall, these results show that the services sector in Nigeria show the least contribution on real GDP. This assertion contradicts the study of Ehigiator (2017) which reveals that the services sector in Nigeria has significantly contributed to GDP, trade and capital imports, and employment in the country within the last 15 years.

**Table 4.5: Sectoral Contribution to Real GDP**

	2016A	2017E	2018F	2019F	2020F	2021F	2022F	Average *
Agriculture	24.45%	24.94%	25.14%	25.17%	24.92%	24.53%	25.44%	24.94%
Mining And Quarrying	8.48%	9.62%	9.62%	9.71%	9.79%	10.12%	10.98%	9.76%
Manufacturing	9.28%	9.22%	9.03%	9.11%	9.36%	9.72%	10.60%	9.47%
Electricity, Gas ,Steam and Air Conditioning Supply	0.34%	0.37%	0.36%	0.36%	0.37%	0.37%	0.40%	0.37%
Water Supply, Sewerage, Waste Management And Remediation	0.15%	0.17%	0.18%	0.19%	0.19%	0.20%	0.22%	0.19%
Construction	3.71%	3.44%	3.46%	3.46%	3.56%	3.66%	3.95%	3.61%
Trade	17.18%	16.67%	16.48%	16.50%	16.57%	16.50%	17.35%	16.75%
Accommodation And Food Services	0.91%	0.84%	0.90%	0.95%	0.99%	1.01%	1.09%	0.96%
Transportation And Storage	1.19%	1.15%	1.18%	1.20%	1.20%	1.20%	1.27%	1.20%
Information And Communication	11.57%	11.29%	11.19%	11.07%	10.85%	10.60%	10.87%	11.06%
Arts, Entertainment And Recreation	0.22%	0.25%	0.27%	0.27%	0.29%	0.30%	0.33%	0.27%
Financial and Insurance	2.98%	3.00%	2.95%	2.87%	2.81%	2.76%	2.87%	2.89%
Real Estate	7.22%	6.98%	6.93%	6.96%	6.89%	6.79%	7.07%	6.98%
Professional, Scientific And Technical Services	3.73%	3.73%	3.70%	3.60%	3.50%	3.42%	3.52%	3.60%
Administrative & Support Services	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Public Administration	2.31%	2.22%	2.23%	2.19%	2.21%	2.21%	2.35%	2.25%
Education	2.24%	2.10%	2.20%	2.24%	2.28%	2.33%	2.50%	2.27%
Human Health And Social Services	0.70%	0.68%	0.71%	0.70%	0.70%	0.71%	0.76%	0.71%
Other Services	3.32%	3.32%	3.45%	3.44%	3.51%	3.56%	3.77%	3.48%

**Source: FSDH Research (2018).**

#### 4.7 Descriptive Statistics of Empirical Data

The descriptive statistics of the series under investigation are shown in Table 4.6 and appendix S for the aggregated and disaggregated models under investigation. The first column shows the variable name in the models and the time span for the study is 1961 to 2017 (57 years). Also, the descriptive statistics show the mean of each variable as a measure of central tendency. The mean values represent midpoints of

the collected data for the variables. Table 4.6 shows that on average, the variables are less than 1 percent, with gL and gEXP showing negative values. This implies that all the variables have not exhibited significant increase over the years under investigation, indicating slow growth rates among the variables, and as shown on time plots in appendix S.

Additionally, Table 4.6 shows the standard deviation of each variable as a measure of central dispersion or spread of data from the mean. As a measure of dispersion, the values of the standard deviation for the variables are low, spanning from 0.045 percent to 5.277 percent across the variables. The values indicate that the data points are close to the mean of the data set. As such, the data points for the variables are not spread out over a wider range of values.

**Table 4.6: Descriptive Statistics of Empirical Data**

<b>Variable</b>	<b>Obs.</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
<i>gY</i>	57	0.0399215	0.0823156	-0.1574363	0.3373578
<i>gL</i>	57	-0.0136309	0.045214	-0.1362762	0.1334404
<i>gK</i>	57	0.0933982	0.5203226	-0.4483543	2.573567
<i>gH</i>	57	0.081933	0.2707825	-0.7915266	1.097343
<i>gPRO</i>	57	0.2517701	0.2121201	-0.3641256	0.7313433
<i>gGNC</i>	57	0.2352659	0.6402897	-0.4574503	4.549231
<i>gSVC</i>	57	0.6039976	2.563441	-0.8224092	19.16551
<i>gOTS</i>	57	0.5680801	2.027012	-0.7036774	13.925
<i>gAFF</i>	57	0.2708904	0.4078847	-0.9297218	2.028318
<i>gMAN</i>	57	0.9386493	5.277802	-0.95625	40.03175
<i>gMAQ</i>	57	0.6869296	2.358847	-0.9330406	16.86275
<i>gREC</i>	57	0.3244467	0.5651531	-0.7274284	2.569137
<i>gBDS</i>	57	0.2782391	2.452495	-5.026554	16.12537
<i>gDMT</i>	57	0.1727503	0.339304	-0.9313592	1.682897
<i>gEXP</i>	57	-0.1450364	2.662846	-19.32331	3.733632
<i>gIMP</i>	57	0.3712443	1.100463	-0.7673444	7.277183
<i>gPUT</i>	57	0.6087377	1.328379	-0.8181818	6.352367
<i>gTRC</i>	57	0.618437	2.69602	-0.7631011	20.18062
<i>gCFI</i>	57	0.7944921	3.196852	-0.8985426	23.80911
<i>gGOV</i>	57	0.8074499	3.666765	-0.8819625	27.58119
<i>gPPF</i>	57	0.3673054	1.745166	-0.8518814	12.97563
<i>gMIS</i>	57	0.5577482	1.993798	-0.6434263	13.96855

**Source: Author's Compilation**

Furthermore, Table 4.6 shows the minimum and maximum values of the variables. The minimum values are all negatives, with gEXP and gBDS showing low values of -19.32 and -5.02 respectively. The minimum values denote that the variables have shown significant low values at any point within the number of years under investigation. On the other hand, the maximum values are positives, with gMAN, gGOV, gCFI and gTRC showing high values of 40.03 percent, 27.58 percent, 23.80 percent and 20.18 percent, respectively. However, gY, gL and gPRO, show low

maximum values of 0.33 percent, 0.13 percent and 0.73 percent, respectively. Based on the minimum and maximum values in Table 4.6, it is arguable that the rate of economic growth in Nigeria over the period under investigation has been poor. Furthermore, growth in labour and growth in bank lending to production sector have not been impressive over the years.

#### **4.8 Chapter Summary**

This chapter provided detailed discussion about the Nigerian economy based on its historical background, the economic outlook, evolution of banking, and the economic sectors in Nigeria. Consequently, this chapter has provided a basis to fulfil the fourth research objective which is to investigate the Nigerian economy as a case study with analysis of its sectoral bank lending. As such, the next chapter will focus on analysis of the data, interpretation of empirical results and discussion of findings using aggregated data or sectors to provide a basis for conclusion.

## CHAPTER FIVE

### DATA ANALYSIS AND INTERPRETATION I (AGGREGATED DATA)

#### 5.1 Chapter Introduction

In the previous chapter, the case study of the research has been discussed by exploring the historical background of Nigeria, the economic outlook, evolution of banking and its economic sectors. As such, this chapter builds on other previous chapters as its significance creates a foundation for conclusion. In this regard, the relevance of this chapter provides a basis to fulfil the sixth research objective of this thesis which seeks to empirically investigate relationship and causality between sectoral bank lending and economic growth in Nigeria using aggregated or sectors data. More importantly, this chapter exhibits the contribution to existing knowledge by achieving the research aim of this study.

In this line of reasoning, this thesis provides two different sets of analyses using aggregated and disaggregated sectoral data. The analyses support the argument of Odedokun (1996) by integrating theoretical framework of economic growth in the empirical models under investigation for robustness. Thus, this study argues in line with Odedokun (1996), that considering other determinants of economic growth is essential as sectoral bank lending cannot reliably explain economic growth without other theoretical variables. In this chapter, the aggregated sectors are considered while the next chapter focuses on the disaggregated sectoral analysis. The data analysis steps in Figure 3.1 on page 105 are followed in this chapter sequentially.

#### 5.2 Unit Root Tests for Aggregated Sectors

The unit root tests for aggregated sectors are shown in appendices E and F, and summarised in Table 5.1. The ADF and PP unit root tests examine the null hypothesis that the time series under consideration has a unit root or is non-stationary. The ADF unit root tests show that t-statistic for *gPRO* is significant at 5% level, while other variables are statistically significant at 1% level (absolute values greater than critical values). For PP unit root tests, the t-statistics for all the variables are significant at 1% level (absolute values greater than critical values). Thus, the null hypothesis is rejected, which implies that all the variables under investigation are stationary or purely integrated of order zero [ $I(0)$ ]. Consequently, no further action of data transformation was performed.



**Table 5.1: Summary of ADF and PP Unit Root Tests for Aggregated Sectors**

Variable	ADF Test		PP Test	
	Constant only	Decision	Constant only	Decision
<i>gY</i>	-3.765***	I(0)	-5.316***	I(0)
<i>gL</i>	-3.931***	I(0)	-5.733***	I(0)
<i>gK</i>	-5.357***	I(0)	-7.736***	I(0)
<i>gH</i>	-4.030***	I(0)	-4.890***	I(0)
<i>gPRO</i>	-3.311**	I(0)	-3.940***	I(0)
<i>gGNC</i>	-4.265***	I(0)	-8.254***	I(0)
<i>gSVC</i>	-4.003***	I(0)	-6.731***	I(0)
<i>gOTS</i>	-3.711***	I(0)	-8.425***	I(0)

**Note:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively.

**Source:** Author's calculations.

### 5.3 Bounds Testing Approach

Based on the unit root test results which show that variables in the aggregated sector model are stationary, this study further employed the bounds testing approach of Pesaran, Shin and Smith (2001), to examine long-run relationship using case III (unrestricted intercept and no trend). Hence, the formulated ARDL model for aggregated sectors in equation 3.19 was examined. For this study, the *F*-statistic value is compared with the lower bound critical values as the variables are purely I(0) (appendix Q). The order of lags was determined using AIC as shown in appendix G. The lags for *gY*, *gL*, *gK*, *gH*, *gPRO*, *gGNC*, *gSVC* and *gOTS* are 1, 0, 0, 0, 0, 0, 0 and 1 respectively. The result of the bounds testing approach is shown in appendix H and summarised in Table 5.2.

**Table 5.2: Summary of Bounds Test Result for Aggregated Sectors**

F-Statistic	I(0) Regressors for $k=7$ Critical Values of Narayan (2005) for Case III		Decision
4.917	1%	3.346	Long-run relationship exists
	5%	2.513	
	10%	2.155	

**Source:** Author's Compilation

As shown in Table 5.2, the decision regarding null hypothesis of ‘no long-run relationship’ is determined by the value of F-statistic in comparison to Narayan’s (2005) critical values for  $I(0)$  regressors. The decision on the bounds testing result is thus: we fail to reject null hypothesis of no cointegration or long-run relationship if F-statistic is less than the lower bound  $[I(0)]$  critical values, or reject null hypothesis if F-statistic is greater than the lower bound  $[I(0)]$  critical values. From Table 5.2, the value of F-statistic is 4.917, is greater than Narayan’s (2005) lower bound  $[I(0)]$  critical values for 1%, 5% and 10% significance levels. Thus, a conclusive decision to reject the null hypothesis of ‘no cointegration or long-run relationship’ applies in the aggregated sectors ARDL model. The bounds testing result implies existence of stable long-run relationship between variables in the aggregated sectors models. Hence, this study proceeded to examine long-run and short-run coefficients using the ARDL-error correction model (ECM) technique.

#### 5.4 Long-run and Short-run Coefficients

Following the existence of long-run relationship in the aggregated sectors model, the model specified in equation 5.1 (respecified below) showing long-run and short-run elasticities is examined to investigate relationship among the variables.

$$\begin{aligned} \Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gPRO_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gGNC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gSVC_{t-o} \\ & + \sum_{p=0}^t \alpha_8 \Delta gOTS_{t-p} + \lambda ECT_{t-1} + e_t \end{aligned} \quad (5.1)$$

The results are shown in appendix I and summarised in Table 5.3. to test the hypotheses outlined hereafter.

$H_0$  (Null Hypothesis): There is no positive and statistically significant relationship between bank lending to aggregated economic sectors and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a positive and statistically significant relationship between bank lending to aggregated economic sectors and economic growth in Nigeria.

**Table 5.3: Summary of ECM Test for Aggregated Sectors**

Variable	Coefficient (standard error)
Constant	0.0075 (0.0170)
$\bar{R}^2$	0.4616
$ECT_{t-1}$	-0.8158 (0.1444)***
<u>Long-run coefficient</u>	
gL	-0.4607 (0.3070)
gK	-0.0102 (0.0253)
gH	0.0816 (0.0630)
gPRO	0.1044 (0.0673)
gGNC	0.0065 (0.0214)
gSVC	0.0070 (0.0116)
gOTS	-0.0226 (0.0207)
<u>Short-run coefficient</u>	
$\Delta gOTS_t$	0.0093 (0.0067)

**Note:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively. Standard errors in parentheses.

**Source:** Author's calculations.

As shown in Table 5.3, the coefficient of the constant shows a value of 0.0075, however, the constant is not statistically significant. The  $\bar{R}^2$  (coefficient of determination) measures the proportion or percentage of the total variation in gY which is explained by the regressors (Gujarati and Porter, 2010). In Table 5.3, the  $\bar{R}^2$  value of 0.4614 implies that the regressors in the aggregated sector model account for 46.14 percent total variation in gY. Hence, other variables not explicitly included in the aggregated sectors regression model account for 53.86% of total variation in gY.

The error correction term (ECT) or speed of adjustment of the variables towards equilibrium is a way to reconcile short-run behaviour of the variables with their long-run behaviour. As such, ECT shows the degree at which any disequilibrium in previous year is being corrected for in the current period. From equation 5.1,  $\Delta gY$  depends on the regressors and the equilibrium error term. For this model,  $\lambda$  is negative, the term  $\lambda ECT_{t-1}$  is negative (indicating convergence), therefore,  $\Delta gY_t$  will be negative to restore the equilibrium. This further implies that if  $gY_t$  is above its equilibrium value, it will start falling in the next period to correct the equilibrium error. The ECT value in Table 5.3 is -0.8158 and significant at 1% level. This indicates that deviation in the value of  $gY_t$  in the previous year is adjusted for in the next year at convergence speed of 81.58%.

In Table 5.3, the standard errors are measures of the “goodness of fit” and precision (Stock and Watson, 2019) as they indicate the standard deviation of the coefficients from the estimated regression line. As such, the larger the standard error of an estimator, the greater the uncertainty of estimating the true value of the undetermined parameter. The standard error values of the coefficients as shown in Table 5.3 are very low, which indicates that there is low uncertainty of estimating the true value of the undetermined parameters in the model. Furthermore, the standard errors depict that the estimates of the coefficients exhibit precision in making prediction about economic growth in Nigeria, from the aggregated sectors bank lending perspective.

The long-run and short-run elasticities in Table 5.3 show that the coefficients of the regressors are not statistically significant which implies that there is no statistically significant relationship between the regressors and economic growth in the long run and short run. Hence, we fail to reject the null hypothesis which states that there is no significant relationship between bank lending to aggregated economic sectors and economic growth in Nigeria. This implies that economic growth in Nigeria is not associated with bank lending to aggregated economic sectors.

Following the views of Bernanke and Blinder (1988) and Kashyap and Stein (1994) as proponents of bank lending channel, the findings of the study provide a basis to argue that bank lending decisions to aggregated sectors in Nigeria fail to influence the transmission of monetary policy. Also, since availability of credit is regarded as an essential macroeconomic variable which boosts activity in a real economy through the bank lending channel (Afrin, 2017), the findings of this study support the assertion of Bernanke and Gertler (1995) that reduction in supply of commercial bank credit

reduces real activity and increases external finance premium. As such, the findings of this study explains the incessant slow economic growth in Nigeria which supports the studies of Obamuyi (2010), Terungwa (2012), Luper (2012), Ogbo and Nwachukwu (2012), Eferakeya (2014), Aminu and Shariff (2015) and Adedeji et al. (2018) .

Based on this empirical findings, it is arguable that that firms in Nigeria have been switching to other substitute of banks loans which has made bank lending ineffective in enhancing economic growth. Thus, these findings support the studies of Obamuyi (2010) and Eniola and Entebang (2015), which argue that firms in Nigeria, especially SMEs are facing problems in accessing bank loans due to poor creditworthiness, lack of collateral, poor project-package, inadequate record, high risk and loan diversion. Hence, these problems coupled with lack of collateral have triggered the existence of moral hazards and information asymmetries on the impact of banks and other finance providers to issue credit especially to start-up.

Additionally, this study supports the postulation of Himmelberg and Morgan (1995) that banks have lost their market share to financial markets and other intermediaries. As such, this study argues in line with Edwards (1993) that the special role of banks as financial intermediaries in aggregated Nigerian economic sectors are 'obsolete'. Consequently, the role of bank lending in the transmission channel of monetary policy in Nigeria can be argued as passive and ineffective. Arrow and Debreu (1954), the passive role of banks in Nigeria can be associated with perfections in Nigerian financial markets which has made financial intermediaries become redundant. However, a further study is required to investigate such postulation.

Hence, these findings contradict the studies of Odedokun (1996), Odedokun (1998), Levine, Loayza and Beck (2000), Vaithilingam, Guru and Shanmugam (2003), McCaig and Stengos (2005), Hao (2006), Lu and Shen (2012), Zhang, Wang and Wang (2012) Mamman and Hashim (2014), Korkmaz (2015), Grbic (2016), Adediran et al. (2017), Fu, Lin and Molyneux (2018), which show that there is a positive and significant relationship between bank-based view and economic growth.

### 5.5 Causality Tests for Aggregated Sectors

In the previous sections, this study has provided empirical evidence to examine the short-run and long-run relationship between aggregate sectoral bank lending and economic growth in Nigeria. At this juncture, this study follows the common phrase in statistics that ‘correlation does not imply causation’ to provide further empirical evidence for this study. In this regard, this study further conducted Granger causality Wald tests to determine the direction of causality between variables in the aggregated sectors model, as shown in appendix K and summarised in Table 5.4. The hypotheses tested are specified thus:

$H_0$  (Null Hypothesis): There is no causality between bank lending to aggregated economic sectors and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a causality between bank lending to aggregated economic sectors and economic growth in Nigeria.

**Table 5.4: Summary of Granger Causality Tests for Aggregated Sectors**

Direction of Causality	Chi-square (prob)	Remark
$gL \longrightarrow gY$	5.7618 (0.218)	No causality
$gK \longrightarrow gY$	1.8531 (0.763)	No causality
$gH \longrightarrow gY$	2.3753 (0.667)	No causality
$gPRO \longrightarrow gY$	3.7739 (0.437)	No causality
$gGNC \longrightarrow gY$	1.0063 (0.909)	No causality
$gSVC \longrightarrow gY$	4.8558 (0.302)	No causality
$gOTS \longrightarrow gY$	5.5096 (0.239)	No causality
$gY \longrightarrow gL$	21.632 (0.000)***	$gY$ Granger causes $gL$
$gY \longrightarrow gK$	5.4879 (0.241)	No causality
$gY \longrightarrow gH$	9.288 (0.054)*	$gY$ Granger causes $gH$
$gY \longrightarrow gPRO$	24.734 (0.000)***	$gY$ Granger causes $gPRO$
$gY \longrightarrow gGNC$	0.4545 (0.978)	No causality
$gY \longrightarrow gSVC$	5.6218 (0.229)	No causality
$gY \longrightarrow gOTS$	3.4728 (0.482)	No causality

**Note:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively

The Granger causality results show that the p-values of the Chi-square estimates from the regressors to economic growth are not statistically significant. As such, we fail to reject the null hypothesis, which implies that there is no causality between the bank lending to aggregated sectors and economic growth in Nigeria. Hence, this study finds new evidence to support the neutrality hypothesis of Lucas (1988), and other subsequent studies such as Akbas (2015) and Pradhan (2018). In this regard,

this study argues that the role of bank lending to the aggregated sectors on economic growth in Nigeria is overstated and ineffective.

Hence, this outcome supports the view of Kashyap and Stein (1994) which emphasises that the importance of the lending view began to fall out of favour during the 1960s with empirical evidence from the studies of Romer and Romer (1989), Favero, Giavazzi and Flabbi (1999) and Simpasa, Nandwa and Nabassaga (2014). Thus, this study finds new evidence to support the assertion of Kashyap and Stein (1994), and argues that the Nigerian banking system heavily relies on credit-rationing system without theoretical support in its economic sectors. Furthermore, the study contradicts the view of Afrin (2017) which stresses that credit is regarded as an essential macroeconomic variable which boosts activity in a real economy through the bank lending channel. In the Nigerian context, the findings of this study argue that bank lending is ineffective in enhancing economic growth, which further contradicts the financial intermediation theory. As such, this study argues that the incessant slow economic growth and increasing unemployment rate in Nigeria is attributable to the ineffective bank lending channel, which supports the studies of, Akeju and Olanipekun (2014); Enejoh and Tsauni (2017); Imoisi, Amba and Okon (2017); Ewubare and Ushie (2018).

Additionally, the Granger causality results reveal that the p-values of the Chi-square estimates for economic growth to labour, human capital and production sector are statistically significant at 1%, 10% and 1% levels of significance, respectively. Thus, we reject the null hypothesis while the p-values for economic growth to other independent variables are not statistically significant. Hence, there is a unidirectional causality running from economic growth to labour, human capital and production sector. respectively. As such, these empirical results support growth-led finance view proposed by Robinson (1952) or demand-following hypothesis of Patrick (1966).

Thus, this outcome supports studies in Nigeria such as Madichie et al. (2014) and Osuji (2015), and other studies conducted in other countries such as Hassan, Sanchez and Yu (2011), Ndlovu (2013), Pan and Mishra (2018), Nasir, Majeed and Aleem (2018) and Bist (2018). This implies that as economic growth increases in Nigeria, this causes growth in labour and human capital which contradicts growth theories. Hence, this study opposes the exogenous theory of Solow (1956) and Swan (1956), and the study of Solarin and Bello (2011) which finds evidence of causality running from labour and economic growth in Nigeria.

Consequently, as economic growth increases in Nigeria, this causes increase in labour force participation rate for ages 15 to 24. This result clearly explains why Nigeria has been experiencing increasing youth unemployment over the years, as this depends on the sluggish rate of economic growth since independence. Also, this study shows that increase in economic growth in Nigeria would cause increase in human capital through enrolment in tertiary institutions by profit-maximising agents. This study contradicts endogenous growth theory of Romer (1986) and Lucas (1988), which builds on Arrow (1962), as profit-maximising agents in Nigeria tend to accumulate more knowledge in response to increasing economic growth.

Additionally, this study reveals a unidirectional causality running from economic growth to bank lending in the production sector. Hence, as economic growth increases in Nigeria, this would cause demand of credit in the production sector. In line with this, as activities in the economy expand, bank deposits increases due to higher transaction balances which concurrently increases supply of bank credit to the production sector (Blinder, 1987). As a primary economic sector in Nigeria, the production sector measures the aggregate output of organisations involved in an economy's industrial sector. Consequently, this study argues that the performance of the production sector in Nigeria in terms of availability of bank credit or the financial intermediation function is caused by the rate of economic growth in Nigeria.

### **5.6 Diagnostic Tests for Aggregated Sectors**

This study further provides empirical evidence for diagnostic tests of the aggregated sectors model as shown in appendix J and summarised in Table 5.5. First, the study conducted Jarque-Bera test to examine normality of residuals in the regression model. The null hypothesis of the Jarque-Bera test is that the residuals in the models are normally distributed. As such, the null hypothesis cannot be rejected if the p-value is greater than the appropriate significance level. For this study, the p-value of the JB statistic in aggregated sectors model is 0.1262 which is not statistically significant. As such, we fail to reject the null hypothesis, which implies that the residuals in the regression model are normally distributed.

The study further conducted the Durbin-Watson and Breusch-Godfrey tests to examine the null hypothesis that the residuals are not autocorrelated or do not possess serial correlation. In Table 5.5, the d-statistic ( $d$ ) for Durbin-Watson test result for aggregated sectors is 1.998882. Based on the 5% significance points in the work of Savin and White (1977) as shown in appendix R, the lower ( $dL$ ) and upper



bounds ( $dU$ ) values for the appropriate sample size of this study (this study focuses on  $n=60$  for 57 observations) and  $k=7$  are 1.335 and 1.850 respectively. According to Savin and White (1977), the decision rule is that we reject the null hypothesis of no first-order autocorrelation if  $d < dL$  and we fail to reject the null hypothesis if  $d > dU$ .

Additionally, a value falling within the  $dL$  and  $dU$  range is inconclusive about whether to reject or fail to reject the null hypothesis. For this study,  $d$  value of 1.998882 is greater than  $dU$  value of 1.850 ( $d > dU$ ). Thus, we fail to reject the null hypothesis of no first-order autocorrelation in the regression model. This result is supported by p-value of Breusch-Godfrey test which is not statistically significant at 5% level. Thus, we cannot reject the null hypothesis of 'no serial correlation'. In this regard, it can be deduced that there is no autocorrelation or serial correlation in the residuals of the aggregated sectors model.

Additionally, this study checked for heteroskedasticity in the residuals of the aggregated sectors model using White's, Cameron and Trivedi, and Breusch-Pagan tests to examine the null hypothesis of homoskedasticity and constant/homogenous variance respectively. In Table 5.5, the p-values for the tests are not statistically significant at 5% level which implies that the null hypothesis of homoskedasticity or constant/homogenous variance cannot be rejected. Hence, it can be deduced that there is no problem of heteroskedasticity in the residuals of the model.

Furthermore, this study examined functional form misspecification using 'Regression Specification Error Test' or RESET test of Ramsey (1969) for the null hypothesis 'model has no omitted variables'. In Table 5.5, the p-value of Ramsey test result for aggregated sectors model is not statistically significant at appropriate levels. Hence, we fail to reject the null hypothesis, this implies that the functional form of the model is correctly specified. Thus, the aggregated sector model is very fit for prediction as there is no functional form misspecification. Overall, the diagnostic tests further confirm the validity and reliability of ARDL-ECM estimation results for the model.

**Table 5.5: Summary of Diagnostic Tests for Aggregated Sectors**

Diagnostic Test	Chi-square (p-value)	Remark
Jarque-Bera	4.233 <sup>a</sup> (0.1262)	Normality of residuals
Durbin-Watson	1.9988 <sup>b</sup>	No first-order autocorrelation
Breusch-Godfrey	0.000 (0.9947)	No higher-order autocorrelation
White's	55.77 (0.4080)	No heteroskedasticity
Cameron and Trivedi	70.13 (0.2796)	No heteroskedasticity
Breusch-Pagan	0.51 (0.4766)	No heteroskedasticity
Ramsey RESET	0.78 <sup>c</sup> (0.5131)	No omitted variables

**Notes:** <sup>a</sup>, <sup>b</sup> and <sup>c</sup> denote JB statistic, d-statistic and f-statistic respectively. P-values in brackets.

**Source:** Author's Compilation

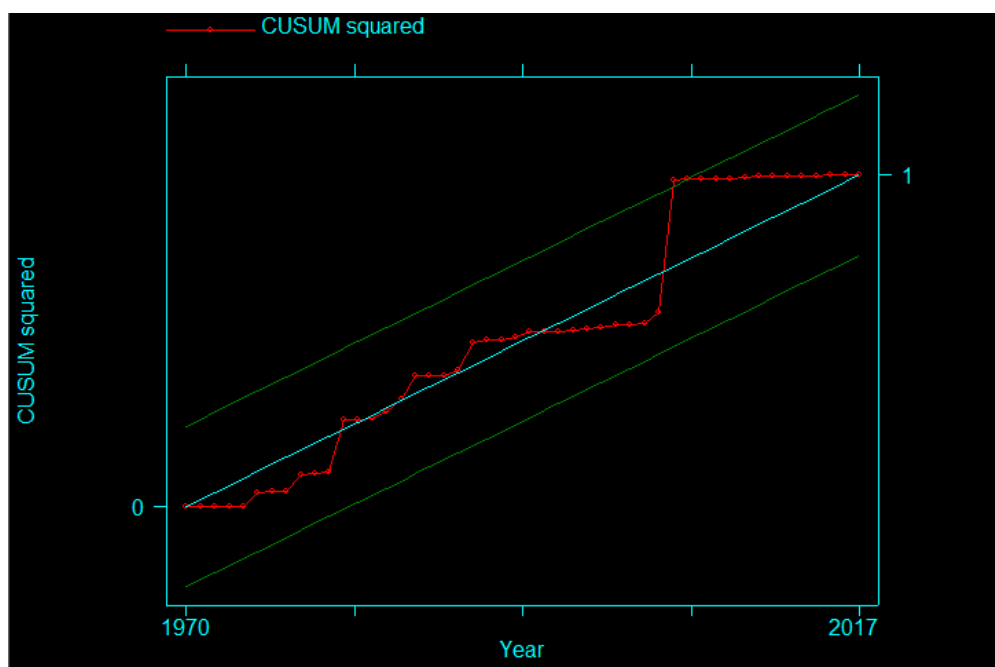
### 5.7 Model Stability Tests for Aggregated Sectors

Under the influence of the contribution of Brown, Durbin and Evans (1975), this study examined the stability of the aggregated sector model using the two graphical techniques- plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ). The plots are shown in Figures 5.1 and 5.2 to examine stability of the coefficients in the models, the plots show that the CUSUM and CUSUMQ statistics are well within the 5 percent significance lines (represented by the green straight lines). Thus, this implies that the coefficients of the models are stable, and the estimates are valid and reliable for prediction. Additionally, this further implies that in the time series data for aggregated sectors model, there is no departure from constancy in a regression analysis over time. Overall, the graphs in Figures 5.1 and 5.2 denote that the coefficients of the regressors are constant without or less irregularities in the regression model.

**Figure 5.1: Plot of Cumulative Sum of Recursive Residuals for Aggregated Sectors**



**Figure 5.2: Plot of Cumulative Sum of Squares of Recursive Residuals for Aggregated Sectors**



**Source: Author's Computation**

### 5.8 Chapter Summary

In this chapter, the empirical evidence for the aggregated or sectors models was conducted to investigate the relationship and causality between bank lending and economic growth. Also, diagnostic tests were conducted to examine the fitness of the models and statistical estimates. Hence, this chapter provides a basis to fulfil the sixth research objective of this thesis which seeks to empirically investigate relationship and causality between sectoral bank lending and economic growth in Nigeria using aggregated or sectors data. The next chapter will focus on using disaggregated data or bank lending to sub-sectors in Nigeria, in order to provide a more detailed investigation about the topic.

## CHAPTER SIX

### DATA ANALYSIS AND INTERPRETATION II (DISAGGREGATED DATA OR SUB-SECTORS)

#### 6.1 Chapter Introduction

In the previous chapter, empirical evidence on aggregated sectoral bank lending and economic growth in Nigeria has been provided. As such, this chapter builds on the previous chapter by providing further empirical evidence using disaggregated sectors and same set of statistical tests. Additionally, the relevance of this chapter provides a basis to fulfil the seventh research objective of this thesis which seeks to empirically investigate relationship and causality between sectoral bank lending and economic growth in Nigeria using disaggregated or sub-sectors data. Also, this chapter provides further empirical evidence to achieve the aim of this study and expand the contribution of the study to existing knowledge.

#### 6.2 Unit Root Tests for Disaggregated Sectors

The unit root tests for disaggregated sectors are shown in appendices E and F, and summarised in Table 6.1. The ADF and PP unit root tests examine the null hypothesis that the time series under consideration has a unit root or is non-stationary. The ADF unit root tests show that t-statistics for  $gREC$ ,  $gBDS$  and  $gMIS$  are statistically significant at 5% level, while other variables are significant at 1% level (absolute values greater than critical values). For PP unit root tests, the t-statistics for all the variables are significant at 1% level (absolute values greater than critical values). Thus, the null hypothesis is rejected, which implies that all the variables under investigation are stationary or purely integrated of order zero  $I(0)$ . Consequently, no further action of data transformation was performed.

**Table 6.1: Summary of ADF and PP Unit Root Tests for Disaggregated Sectors**

Variable	ADF test at level		PP test at level	
	Constant only	Decision	Constant only	Decision
<i>gAFF</i>	-4.299***	I(0)	-6.825***	I(0)
<i>gMAN</i>	-4.209***	I(0)	-7.643***	I(0)
<i>gMAQ</i>	-4.329***	I(0)	-8.204***	I(0)
<i>gREC</i>	-3.359**	I(0)	-5.840***	I(0)
<i>gBDS</i>	-3.380**	I(0)	-6.894***	I(0)
<i>gDMT</i>	-4.745***	I(0)	-8.243***	I(0)
<i>gEXP</i>	-4.006***	I(0)	-6.758***	I(0)
<i>gIMP</i>	-4.384***	I(0)	-7.619***	I(0)
<i>gPUT</i>	-5.532***	I(0)	-8.116***	I(0)
<i>gTRC</i>	-4.001***	I(0)	-6.740***	I(0)
<i>gCFI</i>	-4.139***	I(0)	-7.020***	I(0)
<i>gGOV</i>	-4.105***	I(0)	-6.967***	I(0)
<i>gPPF</i>	-4.272***	I(0)	-8.070***	I(0)
<i>gMIS</i>	-3.144**	I(0)	-8.039***	I(0)

**Note:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively.

**Source:** Author's calculations.

### 6.3 Bounds Testing Approach for Disaggregated Sectors

Based on the unit root test results which show that variables in the aggregated sector model are stationary, this study further employed the bounds testing approach of Pesaran, Shin and Smith (2001), to examine long-run relationship using case III (unrestricted intercept and no trend). Hence, the formulated ARDL model for aggregated sectors in equations 3.15 to 3.18 were examined. For this study, the *F*-statistic values are compared with the lower bound critical values as the variables are purely *I*(0). The lag orders were determined using AIC as shown in appendix G. For model 1 (production sector), the lags for *gY*, *gL*, *gK*, *gH*, *gAFF*, *gMAN*, *gMAQ* and *gREC* are 1, 3, 0, 0, 0, 1, 2 and 0 respectively.

For model 2 (general commerce sector), the lags for *gY*, *gL*, *gK*, *gH*, *gBDS*, *gDMT*, *gEXP* and *gIMP* are 3, 2, 0, 0, 3, 0, 0 and 0 respectively. For model 3 (services sector), the lags for *gY*, *gL*, *gK*, *gH*, *gPUT*, *gTRC* and *gCFI* are 1, 4, 0, 0, 0, 0 and 0 respectively. For model 4 ('others' sector), the lags for *gY*, *gL*, *gK*, *gH*, *gGOV*, *gPPF*

and  $gMIS$  are 1, 3, 0, 0, 0, 4 and 0 respectively. The result of the bounds testing approach is shown in appendix L and summarised in Table 6.2.

**Table 6.2: Summary of Bounds Test Results for Disaggregated Sectors**

Model	F-Statistic	I(0) Regressors Critical Values of Narayan (2005) for Case III				Decision
			1%	5%	10%	
1	6.845	$k=7$	3.346	2.513	2.155	Long-run relationship exists
2	2.251	$k=7$	3.346	2.513	2.155	Inconclusive
3	5.421	$k=6$	3.531	2.643	2.253	Long-run relationship exists
4	5.385	$k=6$	3.531	2.643	2.253	Long-run relationship exists

**Source: Author's Compilation**

As shown in Table 6.2, the decision regarding null hypothesis of 'no long-run relationship' is determined by the values of F-statistic in comparison to Narayan's (2005) critical values for  $I(0)$  regressors. The decision on the bounds testing result is thus: we fail to reject null hypothesis of no cointegration or long-run relationship if F-statistic is less than the lower bound [ $I(0)$ ] critical values, or reject null hypothesis if F-statistic is greater than the lower bound [ $I(0)$ ] critical values. In Table 6.2, the values of F-statistic for models 1, 2, 3 and 4 are 6.845, 2.252, 5.421 and 5.385 respectively. As such, the F-statistic values for models 1, 3 and 4 are greater than Narayan's (2005) lower bound [ $I(0)$ ] critical values at 1%, 5% and 10% significance levels. Thus, a conclusive decision to reject the null hypothesis of 'no cointegration or long-run relationship' applies in models 1, 3 and 4.

On the other hand, the value of F-statistic for model 2 is less than Narayan's (2005) lower bound [ $I(0)$ ] critical values for 1% and 5% levels of significance, but between  $I(0)$  and  $I(1)$  critical values for 10% level of significance level (see appendix Q for  $I(1)$  critical value of 3.353 at 10%). Based on the 10% level of significance, the inference of the bounds testing procedure is inconclusive. Hence, this study progressed to examine long-run and short-run coefficients using the ARDL-error correction model (ECM) technique for models 1, 3 and 4, while vector autoregression (VAR) technique was adopted to examine short-run coefficients for model 2.

#### 6.4 Long-run and Short-run Coefficients

Following the existence of long-run relationship in models 1, 3 and 4, and no long run relationship in model 2, the ARDL-ECM models specified in equations 6.1 to 6.3 (respecified below) showing long-run and short-run elasticities, and VAR model specified in equation 6.4 (respecified below) showing short-run elasticities are examined accordingly.

$$\begin{aligned}\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gAFF_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gMAN_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMAQ_{t-o} \\ & + \sum_{p=0}^t \alpha_8 \Delta gREC_{t-p} + \lambda ECT_{t-1} + e_t\end{aligned}\quad (6.1)$$

$$\begin{aligned}\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gPUT_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gTRC_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gCFI_{t-o} \\ & + \lambda ECT_{t-1} + e_t\end{aligned}\quad (6.2)$$

$$\begin{aligned}\Delta gY_t = & \beta_0 + \sum_{i=1}^m \alpha_1 \Delta gY_{t-i} + \sum_{j=0}^n \alpha_2 \Delta gL_{t-j} + \sum_{k=0}^o \alpha_3 \Delta gK_{t-k} + \sum_{l=0}^p \alpha_4 \Delta gH_{t-l} \\ & + \sum_{m=0}^q \alpha_5 \Delta gGOV_{t-m} + \sum_{n=0}^r \alpha_6 \Delta gPPF_{t-n} + \sum_{o=0}^s \alpha_7 \Delta gMIS_{t-o} \\ & + \lambda ECT_{t-1} + e_t\end{aligned}\quad (6.3)$$



$$\begin{aligned}
gY_t = & \beta_0 + \sum_{i=1}^k \alpha_i gY_{t-i} + \sum_{j=1}^k \alpha_j gL_{t-j} + \sum_{l=1}^k \alpha_l gK_{t-l} + \sum_{m=1}^k \alpha_m gH_{t-m} \\
& + \sum_{n=1}^k \alpha_n gBDS_{t-n} + \sum_{o=1}^k \alpha_o gDMT_{t-o} + \sum_{p=1}^k \alpha_p gEXP_{t-p} \\
& + \sum_{q=1}^k \alpha_q gIMP_{t-q} + e_t
\end{aligned}
\tag{6.4}$$

The ARDL-ECM results are shown in appendix M, and VAR results shown in appendix N. The two statistical results are summarised in Table 6.3 to test the hypotheses outlined hereafter.

$H_0$  (Null Hypothesis): There is no positive and statistically significant relationship between bank lending to disaggregated economic sectors and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a positive and statistically significant relationship between bank lending to disaggregated economic sectors and economic growth in Nigeria.

**Table 6.3: Summary of ARDL-ECM and VAR Tests for Disaggregated Sectors**

Variable	Model 1		Model 2		Model 3		Model 4
Constant	0.0164 (0.0163)		0.0433 (0.0158)***		0.0272 (0.0272)**		0.0400 (0.0150)**
$\bar{R}^2$	0.6328		0.2270		0.5715		0.5682
ECT <sub>t-1</sub>	-0.8825 (0.1400)***		-		-0.7049 (0.1491)***		-0.8193 (0.1498)***
<u>Long-run coefficient</u>							
gL	-0.0797 (0.4263)		-	gL	-0.5371 (0.6017)	gL	0.0134 (0.4960)
gK	-0.0707** (0.0305)		-	gK	-0.1073 (0.0290)	gK	0.0482 (0.0341)
gH	-0.1179 (0.0743)		-	gH	-0.0064 (0.0661)	gH	0.0213 (0.0583)
gAFF	0.0153 (0.0299)		-	gPUT	-0.0018 (0.0136)	gGOV	0.0052 (0.0080)
gMAN	-0.0045 (0.0106)		-	gTRC	0.0753 (0.0363)**	gPPF	-0.0301 (0.0206)
gMAQ	0.0208 (0.0213)		-	gCFI	-0.0630 (0.0305)**	gMIS	-0.0129 (0.0144)
gREC	0.0687 (0.0293)**		-				
<u>Short-run coefficient</u>							
$\Delta gL_t$	-0.7901 (0.3436)**	$\Delta gL_{t-1}$	-0.3615 (0.2599)	$\Delta gL_t$	0.0800 (0.3985)	$\Delta gL_t$	-0.5573 (0.3603)
$\Delta gL_{t-1}$	-1.0307 (0.3253)***	$\Delta gL_{t-2}$	0.2224 (0.2530)	$\Delta gL_{t-1}$	-0.3898 (0.3612)	$\Delta gL_{t-1}$	-0.7802 (0.3341)**
$\Delta gL_{t-2}$	-0.4375 (0.2656)	$\Delta gK_{t-1}$	-0.0011 (0.0194)	$\Delta gL_{t-2}$	0.0792 (0.3404)	$\Delta gL_{t-2}$	-0.4495 (0.2684)
$\Delta gMAN_t$	0.0167 (0.0081)**	$\Delta gK_{t-2}$	0.0049 (0.0203)	$\Delta gL_{t-3}$	0.4406 (0.2725)	$\Delta gPPF_t$	0.0241 (0.0142)*
$\Delta gMAQ_t$	-0.0135 (0.0187)	$\Delta gH_{t-1}$	0.0058 (0.0524)			$\Delta gPPF_{t-1}$	0.0161 (0.0122)
$\Delta gMAQ_{t-1}$	-0.0273 (0.0187)*	$\Delta gH_{t-2}$	-0.0734 (0.0497)			$\Delta gPPF_{t-2}$	0.0204 (0.0103)*
		$\Delta gBDS_{t-1}$	-0.0037 (0.0049)			$\Delta gPPF_{t-3}$	0.0193 (0.0079)**
		$\Delta gBDS_{t-2}$	-0.0064 (0.0050)				
		$\Delta gDMT_{t-1}$	-0.0065 (0.0317)				
		$\Delta gDMT_{t-2}$	-0.0213 (0.0319)				
		$\Delta gEXP_{t-1}$	0.0011 (0.0038)				
		$\Delta gEXP_{t-2}$	0.0030 (0.0037)				
		$\Delta gIMP_{t-1}$	-0.0013 (0.0093)				
		$\Delta gIMP_{t-2}$	0.0009 (0.0091)				

**Notes:** coefficients outside brackets and standard errors inside brackets. \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively. Standard errors in parentheses.

**Source:** Author's calculations.

Table 6.3 shows the constant values of for models 1 to 4 are 0.0164, 0.0433, 0.0272 and 0.0400 respectively. The constant value for model 1 is not statistically significant. However, the constant values for models 2 to 4 are statistically significant at 1%, 5% and 5% respectively. This implies that without the influence of all the regressors in the models 2 to 4,  $gY$  in Nigeria will be 0.0433%, 0.0272% and 0.0400% respectively for the period under investigation. This result indicates that the regressors in the models play an essential role in predicting the level of economic growth in Nigeria. In Table 6.3, the  $\bar{R}^2$  (coefficient of determination) values for models 1 to 4 are 0.6328, 0.2270, 0.5715 and 0.5682 respectively. These results show that the regressors in models 1 to 4 account for 63.28%, 22.70%, 57.15% and 56.82% total variation in  $gY$  respectively. Hence, other variables not explicitly included in models 1 to 4 account for 36.72%, 77.3%, 42.85% and 43.18% of total variation in  $gY$ , respectively. Thus, model 1 account for the largest total variation in  $gY$ , followed by model 3, model 4 and model 2 sequentially.

The error correction term (ECT) or speed of adjustment of the variables towards equilibrium is a way to reconcile short-run behaviour of the variables with their long-run behaviour. Thus, ECT shows the degree at which any disequilibrium in previous year is being corrected for in the current period. In Table 6.3, the ECT values for only models 1, 3 and 4 are shown based on existence of long-run relationship among variables in the models, however, VAR model was estimated for model 2 resulting from no long-run relationship among variables in the model. From equation 6.1 to 6.3,  $\Delta gY$  depends on the regressors and the equilibrium error terms. For the models 1, 3 and 4,  $\lambda$  is negative, the term  $\lambda ECT_{t-1}$  is negative (indicating convergence), therefore,  $\Delta gY_t$  will be negative to restore the equilibrium. This further implies that if  $gY_t$  is above its equilibrium value, it will start falling in the next period to correct the equilibrium error.

The ECT values for models 1, 3 and 4 in Table 6.3 are -0.8825, -0.7049, and -0.8193 respectively, which are all statistically significant at 1% level. This indicates that deviation in the value of  $gY_t$  in the previous year is adjusted for in the next year at convergence speed of 88.25%, 70.49% and 81.93% for models 1, 3 and 4 respectively. The results show that  $gY_t$  in model 1 restores to equilibrium at a faster pace than models 3 and 4. Thus, when  $gY_t$  is above its equilibrium value, it will fall at the fastest rate in the next period in model 1 than models 3 and 4, to correct the equilibrium error.

In a similar vein to the aggregated sectors model, the standard error values of all the coefficients for the disaggregated sectors as shown in Table 6.3 are very low. This indicates that there is low uncertainty of estimating the true value of the undetermined parameters in the model. Furthermore, the standard errors depict that the estimates of the coefficients show “goodness of fit” and precision in making prediction about economic growth in Nigeria, from the disaggregated sectors bank lending perspective. The coefficients of the variables from the ARDL and VAR models are interpreted hereafter.

#### 6.4.1 Long-run Discussions

The view of Stern (1991) asserts that economic growth focuses on how accumulation of physical capital, progress of ideas, innovation and skills can be combined and managed in the medium or long-run. As such, the main focus of analysing relationship between the variables under investigation will be on long-run coefficients. From Table 6.3, the empirical findings of this study show a positive and statistically significant long-run relationships between growth in bank lending to real estate and construction, transport and communication sub-sectors and economic growth in Nigeria, at 5% level of significance. For gREC, a 1% increase in gREC is associated with 0.07% increase in gY in Nigeria, while a 1% increase in gTRC is associated with 0.08% increase in gY. Hence, we reject the null hypothesis for the two sub-sectors.

Consequently, for real estate and construction, transport and communication sub-sectors, the existence of positive and statistically significant relationship between bank lending and economic growth support existing studies such as: Lu and Shen (2012), Zhang, Wang and Wang (2012), Mamman and Hashim (2014), Korkmaz (2015), Grbic (2016), Adediran et al. (2017), Fu, Lin and Molyneux (2018). Also, the findings of this study support the assertion that the unique role banks in the real estate and construction, and transport and communication sub-sectors serves as a dominant source of intermediated credit within the financial system. The findings further support the postulation of Bernanke and Blinder (1988) and Kashyap and Stein (1994) that lending decisions by banks influence the transmission of monetary policy, autonomously of the cost of capital.

Additionally, the findings in the real estate and construction, and transport and communication sub-sectors support the increase in demand for credit postulation of Blinder (1987) which argues that when demand for credit increases, the banking system creates a credit multiplier in the economy with firms borrowing more to expand production. As economy activity expands, bank deposits increases due to higher transaction balances. Concurrently, supply of bank credit increases in order to meet increase in demand and supply of in the real estate and construction, and transport and communication sub-sectors. By and large, the long-run coefficients for real estate and construction, transport and communication sub-sectors support the theoretical view of bank lending in enhancing economic growth as emphasised by the seminal studies of Roosa (1951), Blinder (1987), Bernanke and Blinder (1988), Kashyap and Stein (1994), Bernanke and Gertler (1995).

On the other hand, this study reveals that growth in physical capital and growth in bank credit to financial institutions have negative and statistically significant relationship with economic growth in Nigeria, at 5% level of significance. For gK, a 1% increase is associated with 0.07% decrease in economic growth in Nigeria, while a 1% increase in gCFI is associated with 0.06% decrease in economic growth. Hence, we fail to reject the null hypothesis for physical capital and growth in bank credit to financial institutions. The negative relationship between bank lending and economic growth revealed in this study support the outcome of existing studies such as: Ndako (2010), Mahran (2012), Liang and Reichert (2012), Ngouhouo and Moutie (2015), Modebe and Ezeaku (2016), Xu (2016), Iheanacho (2016), Uremadu, Nwokocha and Duru-Uremadu (2017), Alexiou, Vogiazas and Nellis (2018).

As such, this study contradicts the bank lending channel of Roosa (1951), Blinder (1987), Bernanke and Blinder (1988), Kashyap and Stein (1994), Bernanke and Gertler (1995). Also, this study contradicts the studies of Lu and Shen (2012), Zhang, Wang and Wang (2012) Mamman and Hashim (2014), Korkmaz (2015), Grbic (2016), Adediran et al. (2017), Fu, Lin and Molyneux (2018), which reveal a positive relationship between bank lending and economic growth. For physical capital, the outcome of this study contradicts the view of Smith (1776) which regards capital accumulation as an endogenous phenomenon as it tends to facilitate improvements in productive powers. Also, this study opposes the relevance of capital in the exogenous growth theory of Solow (1956) and Swan (1956).

Furthermore, the negative role of growth in bank credit to financial institutions on economic growth is argued to be a result of stringent lending practices of banks in Nigeria to borrowers, especially SMEs, which supports the studies of Ogbo and Nwachukwu (2012), Eferakeya (2014), Aminu and Shariff (2015), and Adedeji et al. (2018). Thus, the role of financial institutions in Nigeria, comprising of banks and non-banks financial institutions in facilitating economic growth through the financial intermediation process is ineffective.

Progressively, the findings of this study show that growth in labour and growth in human capital are not statistically significant in all the models on the long run, which further contradicts the significance of labour and human capital in the economic growth process. In this regard, this outcome contradicts the exogenous and endogenous growth theories. As economic growth is a medium or long run phenomenon, this study argues that the ineffectiveness of labour and human capital in the bank lending models explains the incessant slow rate of economic growth in Nigeria.

As such, this study opposes the studies of Sulaiman et al. (2015), Omitogun, Osoba and Tella (2016), Ogunleye et al. (2017), Osoba and Tella (2017), Ozekhome (2018), in Nigeria. Additionally, this study opposes empirical studies in other countries such as: Bayraktar-Saglam (2016), Siddiqui and Rehman (2017), Zhu and Li (2017); Barcenilla-Visus and Lopez-Pueyo (2018), Haini (2019); Castello-Climent (2019), Affandi, Anugrah and Bary (2019); Hasyiyati and Sahara (2020); Han and Lee (2020); Uddin, Ali and Masih (2020); Ngepah, Saba and Mabindisa (2020); and Ozbal (2021), among others. More so, growth in physical capital is not statistically significant in services and 'others' sectors, which also contradicts the endogenous economic growth theory of Romer (1986) and Lucas (1988).

Additionally, gAFF, gMAN, gMAQ, gPUT, gGOV, gPPF and gMIS sub-sectors contradict the bank lending channel as the empirical results show that there is no positive and statistically significant relationship between bank lending to the sub-sectors and economic growth in Nigeria, in the long run. Thus, the empirical findings of this study show that growth in bank lending to real estate and construction, and transport and communication sub-sectors show long-run relationship with economic growth in Nigeria. In this regard, it is arguable there is an increasing business activities and investment attention to real estate and construction, and transport and communication sub-sectors which has increased the demand and supply of loans to these sectors. Concurrently, this clearly explains the proposition of Blinder (1987) in

form of allocative efficiency of funds to the two sub-sectors based on demand for credit from individuals and businesses in Nigeria.

#### 6.4.2 Short-run Discussions

Having explained long-run relationships between bank lending to sub-sectors and economic growth in Nigeria as the focus of discussion, this study also considers discussion on the short-run coefficients. Table 6.3 shows that there is no positive and statistically significant relationship between the sub-sectors and proxies of economic growth in the general commerce and services sectors on economic growth in Nigeria. Based on appropriate lags, Table 6.3 shows short-run coefficients for bank lending and proxies of economic growth in the general commerce model, while only short-run coefficients for growth in labour with lags 3 are estimated in the services sector. Thus, these results oppose the bank lending channel proposition of Roosa (1951), Blinder (1987), Bernanke and Blinder (1988), Kashyap and Stein (1994), Bernanke and Gertler (1995), and economic growth theories in the short run.

As such, this study argues that bank lending to sub-sectors in the general commerce and services sectors have no positive and statistically significant on economic growth in Nigeria. Nonetheless, growth in bank lending to manufacturing sub-sector has a positive and statistically significant relationship with economic growth in Nigeria at 5% level of significance, as a 1% increase in gMAN is associated with 0.02% increase in economic growth in Nigeria, in the short run. This result implies that demand for credit has been increasing in the manufacturing sub-sector, despite significant reduction in the sector during 1990s and 2000s as emphasised by Sanni (2018). According to Oladipo et al. (2019), few main industries such as cement, beverages, tobacco and textiles have kept the manufacturing sub-sector afloat while operating at half capacity.

Hence, it is arguable that individuals and businesses have high interest on these manufacturing products in Nigeria. Furthermore, the inclusion of cement in these products could be argued as one of factors influencing the significance of bank lending to real estate and construction in the long run. Nonetheless, the relevance of gMAN on economic growth in Nigeria is only a short run influence, which fades off in the long run. Additionally, the short-run coefficients show that growth in bank lending to personal and professional sub-sector has a positive and statistically significant relationship with economic growth in Nigeria at 10% level of significance for gPPF and gPPF at Lag 2, and at 5% level of significance for gPPF at Lag 3. Hence, a 1% increase in gPPF will increase economic growth by 0.01%, a 1% increase in gPPF at

lag 2 will increase economic growth by 0.02%, and a 1% increase in gPPF at lag 3 will increase economic growth by 0.02%, in the short run. These findings indicate that there is increasing demand for bank credit in seeking for professional, scientific and technical services in Nigeria.

As a developing economy, it can be deduced that the need to seek for personal and professional services is essential to the development of the country which supports the innovative growth theory of Schumpeter (1911) and Schumpeter (1926). Thus, following the view of Schumpeter (1926) which emphasises on the significant role of entrepreneur in pioneering new technologies which drives economic development. It is arguable that the need to enhance economic development has concurrently enhanced economic growth in the short run.

On the other hand, in the production model, the coefficients of gL and gL at lag 1 and gMAQ at lag 1 are negative and statistically significant at 5%, 1% and 10% levels of significance, respectively. Also, gL at lag 1 in the 'others' sector model shows negative and statistically significant relationship with economic growth at 5% levels of significance, which contradicts bank lending and economic growth theories, in the short run. Hence, we fail to reject the null hypothesis. As such, this study argues that in the short run, growth in bank lending to manufacturing, and personal and professional sub-sectors show positive and statistically relationship with economic growth in Nigeria.

### **6.5 Causality Tests for Disaggregated Sectors**

For further empirical evidence, Granger causality Wald tests were conducted in this study to determine the direction of causality between variables in the disaggregated sectors model, as shown in appendix P and summarised in Table 6.4. The hypotheses tested are specified thus:

$H_0$  (Null Hypothesis): There is no causality between bank lending to disaggregated economic sectors and economic growth in Nigeria.

$H_1$  (Alternative Hypothesis): There is a causality between bank lending to disaggregated economic sectors and economic growth in Nigeria.



**Table 6.4: Summary of Granger Causality Tests for Disaggregated Sectors**

Direction of Causality	Chi-square (probability)	Remark
<b>Model 1</b>		
$gL \longrightarrow gY$	9.0569 (0.060)*	$gL$ Granger causes $gY$
$gK \longrightarrow gY$	2.9716 (0.563)	No causality
$gH \longrightarrow gY$	7.0039 (0.136)	No causality
$gAFF \longrightarrow gY$	10.685 (0.030)**	$gAFF$ Granger causes $gY$
$gMAN \longrightarrow gY$	9.8034 (0.044)**	$gMAN$ Granger causes $gY$
$gMAQ \longrightarrow gY$	6.1906 (0.185)	No causality
$gREC \longrightarrow gY$	5.9642 (0.202)	No causality
$gY \longrightarrow gL$	37.585 (0.000)***	$gY$ Granger causes $gL$
$gY \longrightarrow gK$	14.302 (0.006)***	$gY$ Granger causes $gK$
$gY \longrightarrow gH$	8.6128 (0.072)*	$gY$ Granger causes $gH$
$gY \longrightarrow gAFF$	29.729 (0.000)***	$gY$ Granger causes $gAFF$
$gY \longrightarrow gMAN$	0.27067 (0.992)	No causality
$gY \longrightarrow gMAQ$	5.2261 (0.265)	No causality
$gY \longrightarrow gREC$	4.3385 (0.362)	No causality
<b>Model 2</b>		
$gL \longrightarrow gY$	2.6113 (0.271)	No causality
$gK \longrightarrow gY$	0.06493 (0.968)	No causality
$gH \longrightarrow gY$	2.5411 (0.281)	No causality
$gBDS \longrightarrow gY$	2.5835 (0.275)	No causality
$gDMT \longrightarrow gY$	0.46678 (0.792)	No causality
$gEXP \longrightarrow gY$	0.73966 (0.691)	No causality
$gIMP \longrightarrow gY$	0.0344 (0.983)	No causality
$gY \longrightarrow gL$	4.4487 (0.108)	No causality
$gY \longrightarrow gK$	0.22926 (0.892)	No causality
$gY \longrightarrow gH$	0.39554 (0.821)	No causality
$gY \longrightarrow gBDS$	0.13702 (0.934)	No causality
$gY \longrightarrow gDMT$	0.82993 (0.660)	No causality
$gY \longrightarrow gEXP$	0.10982 (0.947)	No causality
$gY \longrightarrow gIMP$	1.6797 (0.432)	No causality

**Notes:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively

Source: Author's Compilation

Table 6.4 (Continued)

Direction of Causality	Chi-square (probability)	Remark
<b>Model 3</b>		
$gL \longrightarrow gY$	8.4786 (0.076)*	$gL$ Granger causes $gY$
$gK \longrightarrow gY$	1.6651 (0.797)	No causality
$gH \longrightarrow gY$	2.081 (0.721)	No causality
$gPUT \longrightarrow gY$	1.9745 (0.740)	No causality
$gTRC \longrightarrow gY$	14.284 (0.006)***	$gTRC$ Granger causes $gY$
$gCFI \longrightarrow gY$	13.111 (0.011)**	$gCFI$ Granger causes $gY$
$gY \longrightarrow gL$	6.3067 (0.177)	No causality
$gY \longrightarrow gK$	9.2296 (0.056)*	$gY$ Granger causes $gK$
$gY \longrightarrow gH$	6.286 (0.179)	No causality
$gY \longrightarrow gPUT$	2.4682 (0.650)	No causality
$gY \longrightarrow gTRC$	4.3332 (0.363)	No causality
$gY \longrightarrow gCFI$	4.1946 (0.380)	No causality
<b>Model 4</b>		
$gL \longrightarrow gY$	4.3104 (0.366)	No causality
$gK \longrightarrow gY$	2.4161 (0.660)	No causality
$gH \longrightarrow gY$	1.4319 (0.839)	No causality
$gGOV \longrightarrow gY$	2.5828 (0.630)	No causality
$gPPF \longrightarrow gY$	5.1816 (0.269)	No causality
$gMIS \longrightarrow gY$	2.7438 (0.602)	No causality
$gY \longrightarrow gL$	3.555 (0.470)	No causality
$gY \longrightarrow gK$	14.873 (0.005)***	$gY$ Granger causes $gK$
$gY \longrightarrow gH$	10.647 (0.031)**	$gY$ Granger causes $gH$
$gY \longrightarrow gGOV$	6.8721 (0.143)	No causality
$gY \longrightarrow gPPF$	12.343 (0.015)**	$gY$ Granger causes $gPPF$
$gY \longrightarrow gMIS$	2.751 (0.600)	No causality

**Note:** \*, \*\* and \*\*\* denote statistical significance at 10%, 5% and 1% levels, respectively

**Source:** Author's Compilation.

### 6.5.1 Causality Discussions

#### **Bidirectional Causality or Feedback Hypothesis**

For model 1, the Granger causality tests in Table 6.4 show evidence of a bi-directional causal relationship or feedback hypothesis between  $gL$  and  $gY$ , as such, we reject the null hypothesis. Hence, this outcome supports the relevance of classical growth theories of Smith (1776), Ricardo (1817), Marx (1872), and Malthus (1925); and exogenous growth theory of Solow (1956) and Swan (1956). Thus, this outcome supports existing studies Solarin and Bello (2011), Gomes and Issler (2017), Huntington-Klein (2017), and Kvamsdal (2019). Consequently, this study argues that the causality running from growth in labour to economic growth in Nigeria is due to the nature of production section as it involves extraction of raw materials which is labour-intensive.

In another vein, the outcome of this study shows that as economic growth increases in Nigeria, this enhances labour participation for ages 15 to 24 which can be associated with increase in demand for labour to enhance production. Nonetheless, due to increasing rate of unemployment in Nigeria, this result supports the view of Marx (1872) which postulates that increase in demand for labour is insufficient to reduce unemployment in the long run due to existence of capitalism.

More so, this study finds existence of bi-directional causal relationship or feedback hypothesis between  $gAFF$  and  $gY$ , as such, we reject the null hypothesis. This result supports the view of Al-Nasser (2015) which asserts that financial sector development and economic exhibit positive interdependent, and the relationship between the two variables could enhance feedback causality. Hence, it is arguable that there is positive interdependent between  $gAFF$  and economic growth in Nigeria. Also, following the view of Patrick (1966), the feasible interaction between  $gAFF$  and  $gY$  shows the existence of development hypothesis in Nigeria.

Thus, it is arguable that there is utmost efficiency of financial intermediation or presence of bank lending channel on economic growth through growth in bank lending to agriculture, forestry and fishery despite neglect of the sub-sector by the Nigerian government since the discovery of crude oil in 1956. This is in line with existing studies such as Hassan, Sanchez and Yu (2011), Ogbonna et al. (2013), Ono (2015), Khosravi (2015), Ibarra (2016), Adeyeye et al. (2015), Deyshappriya (2016), Kyophilavong, Uddin and Shahbaz (2016), Lerskullawat (2017), Abosedra and Sita

(2018), Chileshe (2018), Oyebowale and Karley (2018), Shokr and Al-Gasaymeh (2018), Reddy and Bhardwaj (2019), Hamid and Yunus (2020), Naiborhu (2020).

### **Unidirectional Causality**

From Table 6.4, this study shows existence of unidirectional causality in model 1 running from gY to gK, gY to gH and gMAN to gY. In model 3, there is unidirectional causality running from gL to gY, gTRC to gY, gCFI to gY, and gY to gK. In model 4, there is unidirectional causality running from gY to gK, gY to gH and gY to gPPF. Hence, the null hypothesis is rejected. On bank lending perspective, the unidirectional causality shows evidence of finance-led growth or 'supply-leading hypothesis' from gMAN to gY (model 1), gTRC to gY and gCFI to gY (model 3). Hence, bank lending to manufacturing, transport and communication, and credit to financial institutions sub-sectors in Nigeria support effective financial intermediation process by transferring resources to modern sectors from traditional or non-growth sectors, by enhancing response of entrepreneurs in modern sectors as postulated by Patrick (1966).

Also, this outcome supports the assertion of Nyasha and Odhiambo (2018), that the supply-leading or finance-led growth hypothesis places high significance on the role of financial sector development on economic growth. This outcome supports the views of Bagehot (1873) and Schumpeter (1911), and in line with existing studies such as Marashdeh and Al-Malkawi (2014), Kumar (2014), Fethi and Katircioglu (2015) and Deyshappriya (2016). Consequently, this causal relationships support the significant influence of bank lending to the manufacturing sub-sector on economic growth in Nigeria, as in the case of short-run regression coefficient, and significant influence of transport and communication on economic growth in Nigeria, as revealed by its long-run coefficient.

In this regard, this study argues that growth in bank lending to manufacturing, transport and communication, and credit to financial institutions sub-sectors are causal factors of economic growth in Nigeria which supports the bank lending view of Bernanke and Blinder (1988) and Kashyap and Stein (1994). This further implies that the attraction of individuals and businesses to the three sub-sectors which has increased demand for credit are drivers of economic growth in Nigeria. For manufacturing sector, this can be attributed to the increasing demand for manufacturing activities such as cement, beverages, tobacco and textiles which have

been keeping the sub-sector afloat while operating at half capacity (Oladipo et. al., 2019).

For transport and communication, this can be attributed to the overuse of road transport in Nigeria, and the heavily use of railways in the past (Onokala and Olajide, 2020). Also, Nigeria is Africa's largest information and communications market with 82% of telecoms subscribers, and 29% of internet usage (ITA, 2020). Additionally, gCFI will cause economic growth in Nigeria which can be attributed to increase in demand for credit which follows the postulation of Roosa (1951) and Blinder (1987) on bank credit. Hence, it is arguable that as individuals and businesses show interest in agriculture, forestry and fishery; manufacturing; and transport and communication sub-sectors, this has further showed the importance of gCFI on economic growth in Nigeria.

Thus, this study provides evidence of bank lending channel through manufacturing, transport and communication, and credit to financial institutions sub-sectors, which supports existing studies such as: Hassan, Sanchez and Yu (2011), Ogbonna et al. (2013), Ono (2015), Khosravi (2015), Ibarra (2016), Adeyeye et al. (2015), Deyshappriya (2016), Kyophilavong, Uddin and Shahbaz (2016), Lerskullawat (2017), Abosedra and Sita (2018), Chileshe (2018), Oyebowale and Karley (2018), Shokr and Al-Gasaymeh (2018), Reddy and Bhardwaj (2019), Hamid and Yunus (2020), Naiborhu (2020).

Furthermore, Table 6.4 shows a unidirectional causality running from economic growth to growth in bank lending to personal and professional sub-sector, which supports growth-led finance view proposed by Robinson (1952) or demand-following hypothesis of Patrick (1966). This outcome supports studies in Nigeria such as Madichie et al. (2014) and Osuji (2015), and other studies conducted in other countries such as Hassan, Sanchez and Yu (2011), Ndlovu (2013), Pan and Mishra (2018), Nasir, Majeed and Aleem (2018) and Bist (2018). As such, it is arguable that as economic growth in Nigeria increases, this causes growth in demand for bank lending personal and professional sub-sector. As such, it is further arguable that as economic growth increases, individuals and firms in Nigeria possess the willingness to undertake personal and professional.

For proxies of economic growth, the unidirectional causal relationship running from gL to gY in model 3 supports the relevance of classical growth theories of Smith (1776), Ricardo (1817), Marx (1872), and Malthus (1925); and exogenous growth theory of Solow (1956) and Swan (1956). As such, the null hypothesis is rejected. Thus, this outcome supports existing studies Solarin and Bello (2011), Gomes and Issler (2017), Huntington-Klein (2017), and Kvamsdal (2019). As such, growth in participation of labour for ages 15 to 24 in the services sector is a casual factor of economic growth in Nigeria. This outcome implies that the contribution of the labour force is relevant in the activities of the services sector in Nigeria. As such, the outcome of this study supports the study of Ehigiator (2017) which reveals that the services sector in Nigeria has significantly contributed to GDP, trade and capital imports, and employment in the country within the last 15 years.

Nonetheless, the empirical findings show unidirectional causality running from gY to gK and gY to gH in model 1; gY to gK in model 3; gY to gK and gY to gH in model 4. Thus, the null hypothesis is rejected which implies that causality between determinants of growth and economic growth in Nigeria is growth-led. Thus, as economic growth increases in Nigeria, this will cause accumulation of physical and human capital in the production and 'others' sectors, while economic growth in Nigeria will cause accumulation of physical capital among sub-sectors in the services sector.

In this regard, it is arguable that the economic growth mainly causes an increase in labour participation, accumulation of physical capital, and accumulation of human capital in Nigeria, which contradicts theoretical underpinnings of Solow (1956) and Swan (1956), and endogenous growth theory of Romer (1986) and Lucas (1988). Consequently, this study provides basis to support the view of Ricardo (1817) which regards improvements in productive powers as an exogenous phenomenon, not associated with capital accumulation.

Thus, this result contradicts the findings of Gustavsson and Osterholm (2012), Smetkowski (2017), Rami (2018), Grigoli, Koczan and Tapalova (2018), Rani and Kumar (2019), Aslan and Altinoz (2020), Oyebowale and Algarhi (2020), Khan (2020), Yasmeen et al. (2021), for labour and physical capital. Furthermore, the outcome of this study contradicts the studies of Patterson and Patterson (2012), Sulaiman et al (2015), Dutta and Sobel (2018), Chang, et al., (2018), Zhu and Li (2017); Haini (2019); Castello-Climent (2019), Affandi, Anugrah and Bary (2019); Hasyiyati and Sahara (2020); Han and Lee (2020); Hasyiyati and Sahara (2020); Uddin, Ali and Masih

(2020); Ngepah, Saba and Mabindisa (2020); Maneejuk and Yamaka (2021), Ozbal (2021), for human capital.

### **Neutrality Hypothesis**

Table 6.4 show there is no causality between the sub-sectors in the general commerce and 'others' sectors and economic growth in Nigeria; gMAN and gY, gMAQ and gY, gPUT and gY. As such, we fail to reject the null hypothesis, which implies that is no causality between growth in bank lending to the aforementioned sub-sectors and economic growth in Nigeria. In this regard, this study finds new evidence to support the neutrality hypothesis of Lucas (1988) and other subsequent studies such as Akbas (2015) and Pradhan (2018). Thus, this study argues that the role of financial sector as regards bank lending to the sub-sectors is over-stressed on economic growth in Nigeria. Also, this outcome contradicts the bank lending theory of Bernanke and Blinder (1988), Edwards (1993), and Bernanke and Gertler (1995).

This study also supports the view of Kashyap and Stein (1994) and argues that the Nigerian banking system heavily relies on credit-rationing system without theoretical support in the general commerce sector. The argument of this study is in line with the view of Eniola and Entebang (2015) which posits that commercial banks in Nigeria have changed lending improvement process to favour large businesses over SMEs in preparation for monetary hazards. Consequently, following the studies of Obamuyi (2010), Terungwa (2012), Ogbo and Nwachukwu (2012), Eferakeya (2014), Aminu and Shariff (2015), and Adedeji et al. (2018), availability of credit to SMEs in Nigeria has been a major issue hindering productivity of such firms among sub-sectors in the general commerce and 'others' sectors, manufacturing sub-sector, mining and quarrying sub-sector and public utilities sub-sector.

In this regard, this study argues that the role of bank lending to the aforementioned sub-sectors on economic growth in Nigeria is overstated and ineffective. Hence, this outcome supports the assertions of Edwards (1993), and Bernanke and Gertler (1995) which affirms that the special role of banks is 'obsolete' and traditionally less plausible. Also, this outcome supports the view of Kashyap and Stein (1994) which emphasises that the importance of the lending view began to fall out of favour during the 1960s with empirical evidence from the studies of Romer and Romer (1989), Favero, Giavazzi and Flabbi (1999) and Simpasa, Nandwa and Nabassaga (2014), Reddy and Bhardwaj (2019)

Similarly, this result supports the view of Obamuyi (2010) and Adedeji et al. (2018) which accentuates that high interest rate and stringent lending policies in Nigeria have been major setbacks for firms to obtain loans from banks. Since, activities of SMEs are crucial to economic growth and poverty reduction in developing countries (Akingunola, 2011; Onwuegbuchunam and Akujuobi, 2013), the evidence of ineffective bank lending channel in the general commerce sector is arguable to be a contributing factor to the slow pace of economic growth in Nigeria. The new outcome of this study contradicts studies such as Nwosa and Saibu (2011), Ishioro (2013) and Matousek and Solomon (2018) which finds existence of bank lending channel in Nigeria.

Furthermore, this study argues that ineffective bank lending channel in the sub-sectors of the general commerce sector is associated ineffective bank lending in other sub-sectors of the Nigerian economy: mining and quarrying, real estate and construction, public utilities, government, personal and professional, and miscellaneous sub-sectors. Consequently, as bank lending proves ineffective in these sectors, this reduces production of goods and services which could have been available to foster trading activities in the general commerce sector. Hence, it is further arguable that the bank lending channel in Nigeria favours some specific sub-sectors, which has contributed to the incessant slow economic growth in Nigeria. Particularly, the mining and quarrying sub-sector which is the main source of revenue since its discovery in 1956. Hence, the findings of this study signify the need for economic diversification in Nigeria.

#### **6.6 Diagnostic Tests for Disaggregated Sectors**

In a similar vein to aggregated sector model, this study also provides empirical evidence for diagnostic tests of the disaggregated sectors models as shown in appendix O and summarised in Table 6.5. First, the study conducted Jarque-Bera test to examine normality of residuals in the regression model. The null hypothesis of the Jarque-Bera test is that the residuals in the models are normally distributed. As such, the null hypothesis cannot be rejected if the p-value is greater than the appropriate significance level. For this study, the p-values of the JB statistic in aggregated sectors are 0.1782, 0.344, 0.462 and 0.589 for models 1 to 4 respectively. The p-values are not statistically significant. As such, we fail to reject the null hypothesis, which implies that the residuals in the regression models are normally distributed.



The study further conducted the Durbin-Watson and Breusch-Godfrey tests to examine the null hypothesis that the residuals are not autocorrelated or do not possess serial correlation. In Table 6.5, the  $d$ -statistic ( $d$ ) for Durbin-Watson test result for models 1 to 4 are 1.8816, 2.0970, 1.9595 and 1.9549. Based on the 5% significance points in the work of Savin and White (1977) as shown in appendix R, the lower ( $dL$ ) and upper bounds ( $dU$ ) values for the appropriate sample size of this study (this study focuses on  $n=60$  for 57 observations) and  $k=7$  are 1.335 and 1.850, respectively, and for  $k=6$  are 1.372 and 1.808, respectively.

According to Savin and White (1977), the decision rule is that we reject the null hypothesis of no first-order autocorrelation if  $d < dL$  and we fail to reject the null hypothesis if  $d > dU$ . Additionally, a value falling within the  $dL$  and  $dU$  range is inconclusive about whether to reject or fail to reject the null hypothesis. For models 1 and 2 with  $k=7$ ,  $d$  values of 1.8816 and 2.0970 are greater than  $dU$  value of 1.850 ( $d > dU$ ). Also, for models 3 and 4 with  $k=6$ ,  $d$  values of 1.9595 and 1.9549 are greater than  $dU$  value of 1.808 ( $d > dU$ ). Thus, we fail to reject the null hypothesis of no first-order autocorrelation in the models 1 to 4. These results are supported by p-values of Breusch-Godfrey test which are not statistically significant at 5% level. Thus, we cannot reject the null hypothesis of 'no serial correlation' in the regression models. In this regard, it can be deduced that there is no autocorrelation or serial correlation in the residuals of the disaggregated sectors models.

Additionally, this study checked for heteroskedasticity in the residuals of the disaggregated sectors models using White's, Cameron and Trivedi, and Breusch-Pagan tests to examine the null hypothesis of homoskedasticity and constant/homogenous variance, respectively. In Table 6.5, the p-values for the tests are not statistically significant at 5% level which implies that the null hypothesis of homoskedasticity or constant/homogenous variance cannot be rejected. Hence, it can be deduced that there is no problem of heteroskedasticity in the residuals of the disaggregated sectors models.

Furthermore, this study examined functional form misspecification using 'Regression Specification Error Test' or RESET test of Ramsey (1969) for the null hypothesis 'model has no omitted variables'. In Table 6.5, the p-values of Ramsey test results for disaggregated sectors models (0.6346, 0.9300, 0.7539 and 0.2417) are not statistically significant. Hence, we fail to reject the null hypothesis, this implies that the functional form of the disaggregated models is correctly specified. Thus, the model is very fit for prediction as there is no functional form misspecification. Overall,

the diagnostic tests further confirm the validity and reliability of ARDL-ECM estimation results for the model.

**Table 6.5: Summary of Diagnostic Tests for Disaggregated Sectors**

Diagnostic Test	Chi-square (P-value)				Remark
	Model 1	Model 2	Model 3	Model 4	
Jarque-Bera	3.45 <sup>a</sup> (0.1782)	2.134 <sup>a</sup> (0.344)	2.784 <sup>a</sup> (0.462)	3.247 <sup>a</sup> (0.589)	Normality of residuals
Durbin-Watson	1.8816 <sup>b</sup>	2.0970 <sup>b</sup>	1.9595 <sup>b</sup>	1.9549 <sup>b</sup>	No first-order autocorrelation
Breusch-Godfrey	1.750 (0.1858)	0.534 (0.4647)	0.097 (0.7553)	0.142 (0.7058)	No higher-order autocorrelation
White's	54.00 (0.4744)	54.00 (0.4360)	53.00 (0.4354)	53.00 (0.4354)	No heteroskedasticity
Cameron and Trivedi	69.06 (0.4753)	74.62 (0.3006)	65.21 (0.4343)	63.52 (0.5979)	No heteroskedasticity
Breusch-Pagan	1.72 (0.1898)	1.97 (0.1600)	0.27 (0.6011)	0.73 (0.3940)	No heteroskedasticity
Ramsey RESET	0.58 <sup>c</sup> (0.6346)	0.15 <sup>c</sup> (0.9300)	0.40 <sup>c</sup> (0.7539)	1.46 <sup>c</sup> (0.2417)	No omitted variables

**Notes:** <sup>a</sup>, <sup>b</sup> and <sup>c</sup> denote JB statistic, d-statistic and f-statistic respectively. P-values in brackets.

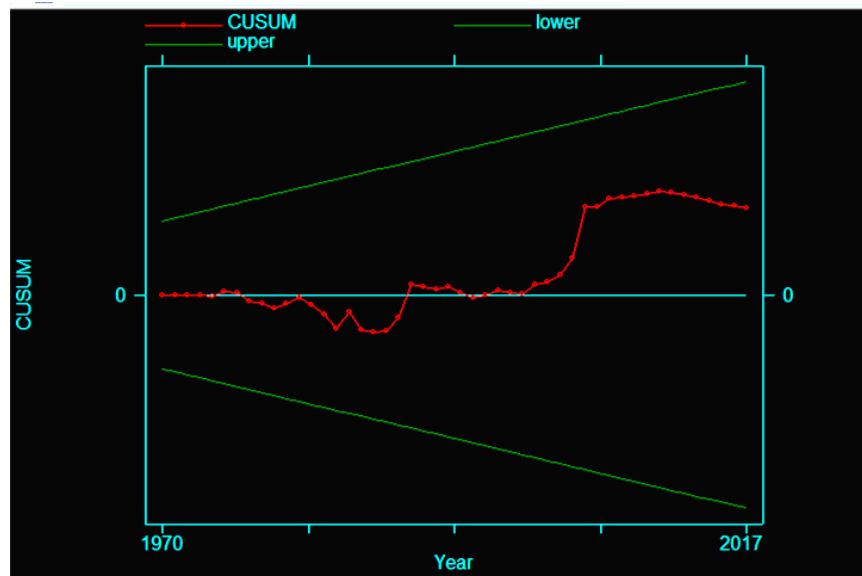
**Source:** Author's Compilation

### 6.7 Model Stability Tests for Disaggregated Sectors

Under the influence of the contribution of Brown, Durbin and Evans (1975), this study examined the stability of the aggregated sector model using the two graphical techniques- plots of cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ). The plots are shown in Figures 6.1 to 6.8 to examine stability of the coefficients in the models, the plots show that the CUSUM and CUSUMQ statistics are well within the within the 5 percent significance lines (represented by the green straight lines). Thus, this implies that the coefficients of the models are stable, and the estimates are valid and reliable for prediction. Additionally, this further implies that in the time series data for aggregated sectors model, there is no departure from constancy in a regression analysis over time.

Overall, the graphs in Figures 6.1 and 6.8 denote that the coefficients of the regressors are constant without or less irregularities in the regression model.

**Figure 6.1: Model 1- Plot of Cumulative Sum of Recursive Residuals**



**Figure 6.2: Model 1- Plot of Cumulative Sum of Squares of Recursive Residuals**

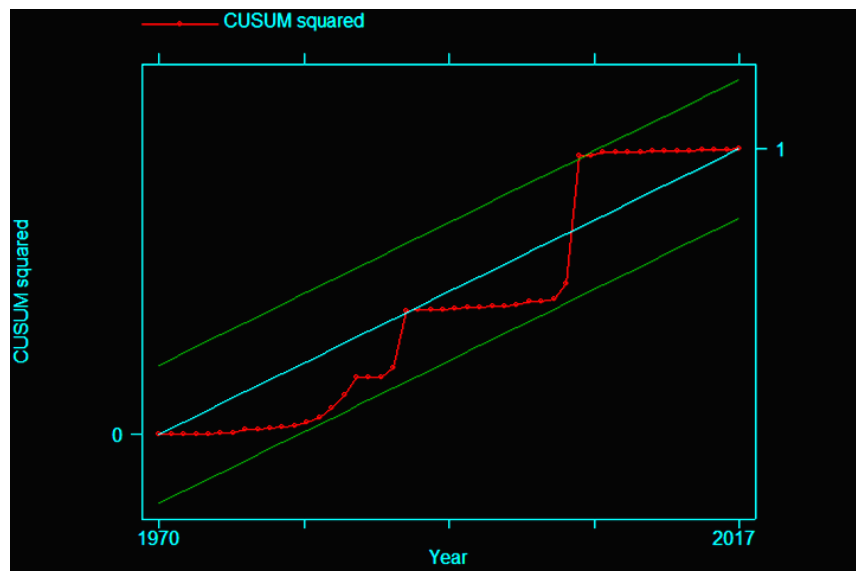


Figure 6.3: Model 2- Plot of Cumulative Sum of Recursive Residuals

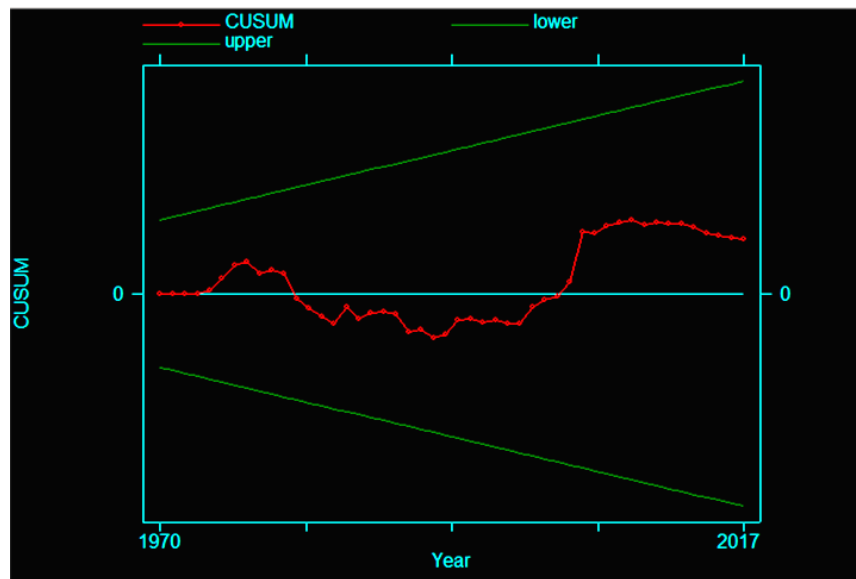


Figure 6.4: Model 2- Plot of Cumulative Sum of Squares of Recursive Residuals

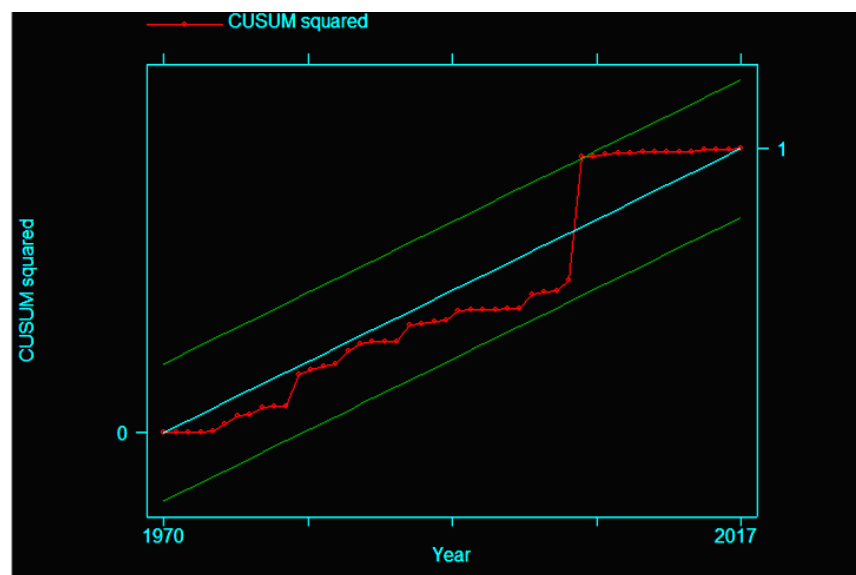
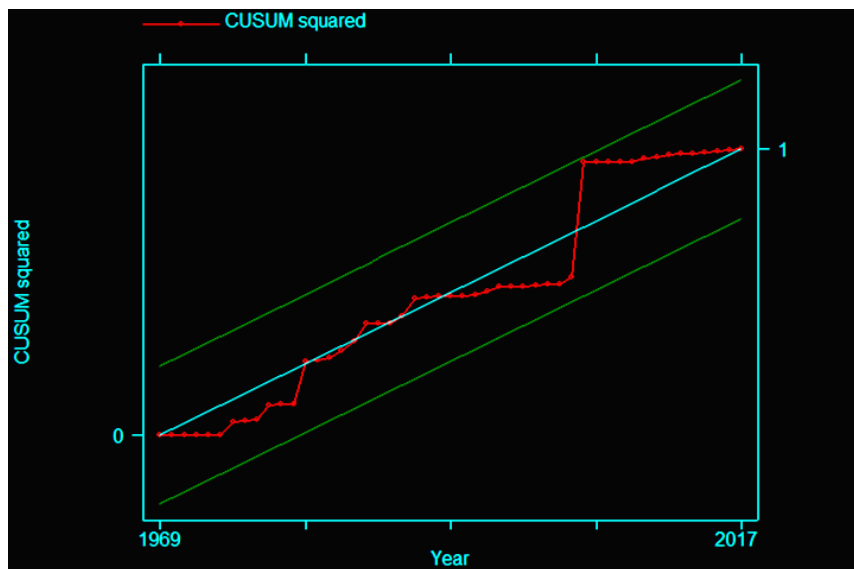


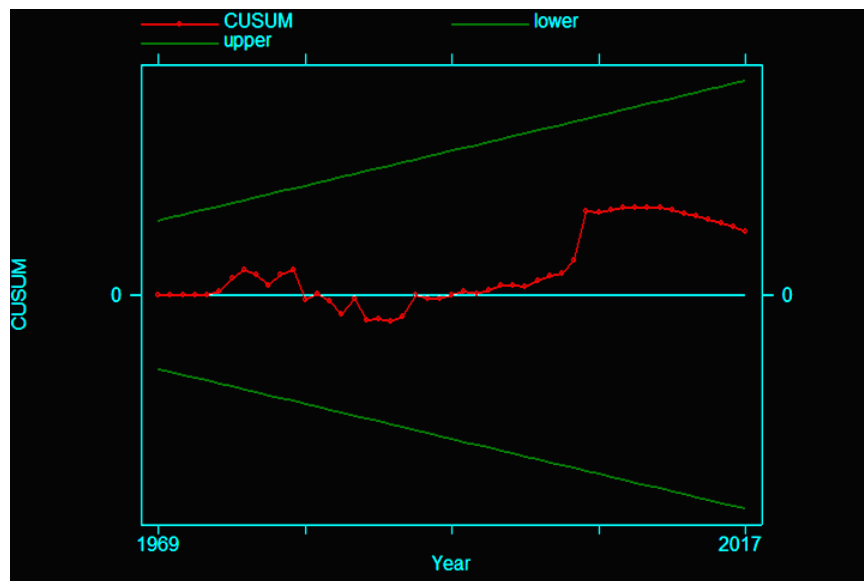
Figure 6.5: Model 3- Plot of Cumulative Sum of Recursive Residuals



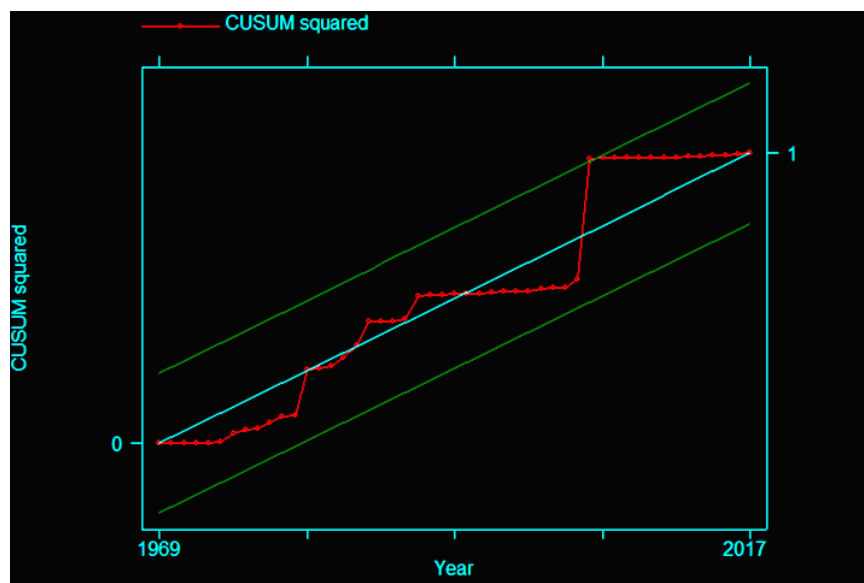
Figure 6.6: Model 3- Plot of Cumulative Sum of Squares of Recursive Residuals



**Figure 6.7: Model 4- Plot of Cumulative Sum of Recursive Residuals**



**Figure 6.8: Model 4- Plot of Cumulative Sum of Squares of Recursive Residuals**



**Source: Author's Computation**

### 6.9 Chapter Summary

In this chapter, the empirical evidence for the disaggregated or sub-sectors models was conducted to investigate the relationship and causality between bank lending and economic growth. Also, diagnostic tests were conducted to examine the fitness of the models and statistical estimates. Hence, this chapter provides a basis to fulfil the seventh research objective of this thesis which seeks to empirically investigate relationship and causality between sectoral bank lending and economic growth in Nigeria using disaggregated or sub-sectors data. In the next chapter, this study provides summary of findings, policy recommendations and implementation strategies, achievement of study objectives and research aim, contributions to knowledge, limitations of the study, areas for further research and conclusion of the thesis.

## CHAPTER SEVEN

### CONCLUSION AND RECOMMENDATIONS

#### 7.1 Chapter Introduction

Based on the previous two chapters which provides empirical evidence from aggregated and disaggregated perspectives, this chapter provides summary of findings, policy recommendations and implementation strategies, achievement of study objectives and research aim, contributions to knowledge, limitations of the study, areas for further research and conclusion of the thesis. Summary of key findings, this study outlines the findings from empirical evidence in chapters five and six, with discussion of findings. Policy recommendations and implementation strategies sub-section highlights policy implications for the government and monetary authority in Nigeria based on the key findings of the study.

In achievement of study objectives and research questions sub-section, the study provides an outline of how the research objectives and research questions have been fulfilled and answered in the study, respectively. In contributions to knowledge, this sub-section provides an avenue to pinpoint the contribution of the study to knowledge and relevance of the developed conceptual framework. Also, this chapter outlines the limitations of the study to identify possible areas for further research. In areas for further research sub-section, this chapter outlines areas which further research could be conducted based on the findings and scope of this study. Finally, conclusion of the thesis sub-section provides an overview of the chapter as a conclusion for the overall thesis.

#### 7.2 Summary of Key Findings

##### 7.2.1 Aggregated Data or Sectors

This study provides two different sets of analyses. On the one hand, this thesis examines an empirical model comprising of aggregated data or sectors in chapter five. As such, this thesis adopts the bounds testing approach of Pesaran, Shin and Smith (2001) to examine relationship among the variables and Wald test to investigate direction of causality. The ARDL-ECM technique shows that there is no positive and statistically significant relationship between bank lending to aggregated sectors and economic growth in Nigeria, based on long-run and short-run coefficients. Also, the  $\bar{R}^2$  (coefficient of determination) shows that the regressors in the aggregated sectors model account for 46.14% total variation in economic growth in Nigeria.



Additionally, the Granger causality tests using aggregated data reveals that there is existence of neutrality hypothesis between the growth in bank lending to aggregated sectors and economic growth in Nigeria, which supports the assertion of Lucas (1988). However, there is a unidirectional causality running from economic growth to labour and human capital, which opposes the exogenous theory of Solow (1956) and Swan (1956), and endogenous growth theory of Romer (1986) and Lucas (1988). Also, this study finds a unidirectional causality running from economic growth to growth-led finance view proposed by Robinson (1952) or demand-following hypothesis of Patrick (1966).

Nonetheless, this study finds no evidence of finance-led growth view or supply-leading hypothesis of Patrick (1966), from the aggregated data or sectors perspective. Consequently, this study argues that there is no effective bank lending channel in Nigeria using aggregated data model which opposes the view of Bernanke and Blinder (1988) and Kashyap and Stein (1994). Based on the aggregated data or sector model, this study argues in line with Edwards (1993) that the special role of banks as financial intermediaries in Nigeria are 'obsolete'. Consequently, the role of bank lending in the transmission channel of monetary policy in Nigeria can be argued as passive and ineffective.

### 7.2.2 Disaggregated Data or Sub-sectors

Using disaggregated data or sub-sectors analysis to develop four empirical models which captures sub-sectors in each sector, this thesis adopts the bounds testing approach of Pesaran, Shin and Smith (2001) to investigate relationship between bank lending and economic growth for sub-sectors in production, services and 'others' sectors. On the other hand, this thesis adopts vector autoregression model (VAR) developed by Sims (1980) to investigate relationship between bank lending and economic growth for sub-sectors in general commerce sector. Additionally, this thesis adopts Wald test to examine causality between the variables under investigation. The  $\bar{R}^2$  (coefficient of determination) show that sub-sectors in the production, general commerce, services and 'others' sectors account for 63.28%, 22.70%, 57.15% and 56.82%, total variation in economic growth in Nigeria respectively.

For the ARDL models, the results show a positive and statistically significant relationship between growth in bank lending to real estate and construction, and transport and communication sub-sectors and economic growth in Nigeria, in the long run. Additionally, the results show a positive and statistically significant relationship between growth in bank lending to manufacturing, and growth in bank lending to

personal and professional (without lags, and at lags 2 and 3) sub-sectors and economic growth in Nigeria, in the short run. However, the VAR model shows that there is no positive and statistically significant relationship between growth in bank lending to sub-sectors in the general commerce sector and economic growth in Nigeria.

For model 1, the Granger causality tests show existence of bidirectional causality or feedback hypothesis between growth in labour, growth in bank lending to agriculture, forestry and fishing sub-sectors and economic growth in Nigeria. Also, the results show a unidirectional causality running from growth in bank lending to manufacturing sub-sector to economic growth in Nigeria as finance-led view or supply-leading hypothesis; unidirectional causality running from economic growth to growth in physical capital. For model 2, the Granger causality tests show that there is no causality between growth in bank lending to the sub-sectors in the general commerce sector and economic growth in Nigeria or neutrality hypothesis.

For model 3, the Granger causality tests show a unidirectional causality running from growth in bank lending to transportation and communication sub-sector to economic growth; and a unidirectional causality running from growth in bank lending to credit to financial institutions sub-sector to economic growth in Nigeria. Hence, there is evidence of finance-led view or supply-leading hypothesis by these two sub-sectors in the services sector, which supports the postulations of Bagehot (1873) and Schumpeter (1911). Also, there is a unidirectional causality running from growth in labour to economic growth, and economic growth to growth in physical capital.

For model 4, the Granger causality tests show unidirectional causality running from economic growth to growth in human capital; economic growth to human capital, and economic growth to growth in bank lending to personal and professional sub-sector. In this regard, empirical results from disaggregated data show mixed views on finance-growth nexus. Particularly, the main arguments emanating from the empirical findings of this thesis are outlined hereafter.

- The bank lending channel is ineffective in driving economic growth in Nigeria from aggregated data or sectors' perspective.
- Bank lending to transportation and communication sub-sector is the most important sub-sector influencing economic growth in Nigeria, as it shows a positive and statistically significant relationship with economic growth in the long run, and Granger causes economic growth in Nigeria.

- Bank lending to sub-sectors in the general commerce sector is futile in influencing economic growth in Nigeria. The  $\bar{R}^2$  (coefficient of determination) shows lowest value of 22.70% variation on economic growth in Nigeria. Also, the empirical findings show that there is no statistically significant relationship between the variables and economic growth in Nigeria, in the long run and the variables do not Granger cause economic growth in Nigeria.
- In a similar vein to general commerce sector, bank lending to sub-sectors in the 'others' sector is ineffective in influencing economic growth in Nigeria. The  $\bar{R}^2$  (coefficient of determination) shows second lowest value of 56.82% variation on economic growth in Nigeria. Also, the empirical findings show that there is no statistically significant relationship between the variables and economic growth in Nigeria, in the long run and the variables do not Granger cause economic growth in Nigeria.
- Variables in the production sector show the highest  $\bar{R}^2$  (coefficient of determination) value of 63.28% variation on economic growth in Nigeria, and the most effective causal relationships.
- Proxies of economic growth in the empirical models of this thesis are mostly influenced by the rate of economic growth in Nigeria, except disaggregated production sector which shows a bidirectional causality between growth in labour and economic growth. Hence, this study argues that this causal evidence is due to the nature of production section as it involves extraction of raw materials which is labour-intensive.

### 7.3 Policy Recommendations and Implementation Strategies

Following the empirical findings of this study, recommendations are highlighted hereafter in order to proffer solutions to the problems revealed in this study.

#### 7.3.1 Determinants of Growth

It has been theoretically established in this study that labour, physical capital and human capital are drivers of growth. Thus, growth of the three aforementioned factors should show a positive and statistically significant relationship with economic growth in the long run, and Granger cause economic growth. However, the empirical evidence of this study proves otherwise, except in the disaggregated production sector. As such, policy makers in Nigeria should adopt strategies to improve relevance of labour, physical and human capital on economic growth in Nigeria. Currently, the Nigerian Federal Government's ERGP initiative launched in April 2017

is aimed at restoring economic growth in Nigeria while providing leverage for resilience and ingenuity of the people.

In this regard, the implementation of the initiative is on the medium term from 2017 to 2020 consistently with the Sustainable Development Goals (SDGs). In this regard, the plan focuses on restoring growth by achieving economic diversification and macroeconomic stability; investing in the people through social inclusion, job creation and youth empowerment, and improvement in human capital; and building a globally competitive economy through investing in infrastructure, improving the business environment and promoting a digital-led growth.

In line with the ongoing, this study supports the implementation of ERGP in order to stimulate economic growth in Nigeria by 2020. However, this study argues that poor implementation of the initiative will yield unproductive results which would require further initiative in the future. Additionally, due to the role of time lag in policy implementation, the effectiveness of ERGP can be examined few years after 2020. Nonetheless, this study recommends a continuous and longer-term focus of ERGP as the current medium-term plan may not yield full desired outcome by 2020. This assertion is based on the constant problem in sustaining economic growth in Nigeria for decades.

To compliment the ERGP initiative, this study recommends government investment and improvement of technical colleges in Nigeria. To achieve this, the Federal Government could increase its budget allocation to states with the aim of improving available resources in Nigerian technical colleges. By so doing, this will enhance students to develop their technical skills as human capital which will help enhance productivity and aggregate output in Nigeria, rather than the high focus on obtaining tertiary institution degrees. Furthermore, improvement of technical colleges in Nigeria will attract numerous secondary school leavers to enrol on different apprenticeship programmes; this will help to Nigerians to develop vocational skills required in different sectors and contribute to long-run economic growth.

To enhance effectiveness of labour participation rate for ages 15-24, the Nigerian government should provide more jobs and increase the minimum wage in the country. The minimum wage in Nigeria has been very poor over the years with different strike actions triggered by the Nigerian Labour Congress (NLC). In 2019, President Muhammadu Buhari signed a bill into law which increased monthly minimum wage in Nigerian from ₦18,000 to ₦30,000 (Achirga, 2021). However, the current monthly

minimum wage remains discouraging. Thus, discretionary increase in minimum wage with consideration of possible inflationary pressures would encourage people to work in different sectors of the economy for higher wages and would concurrently reduce natural rate of unemployment in Nigeria.

For physical capital, it is arguable that Nigeria as a developing country requires more sophisticated physical capital items to aid production of goods and services in different sectors. As such, the Nigerian government should directly increase the quantity and quality of physical capital by increasing spending. For instance, through building more hospitals and schools, providing better roads and bridges, investing in plants that could improve electricity. In this regard, the increase in quality and quantity of human capital will boost production of goods and services, and aggregate output in Nigeria.

### **7.3.2 Finance-growth Nexus**

Based on the empirical findings of this thesis, monetary authorities in Nigeria should adopt schemes that can influence the effectiveness of the bank lending channel, especially to sub-sectors in the general commerce and services. For instance, the Agricultural Credit Guarantee Scheme Fund (ACGSF) which was established by Decree No. 20 of 1977, commenced operations in April 1978. The scheme was amended by President Muhammadu Buhari in 2019 to increase the share capital fund of the scheme to ₦50 billion from ₦3 billion, in line with the CBN's expansionary motive to increase lending to the agricultural sector and boost food production. It is arguable that this scheme contributes significantly to the existence of bidirectional causality or feedback hypothesis between gAFF and gY in Nigeria as revealed by the empirical findings of this study.

Consequently, similar schemes which focuses on boosting lending to particular sectors or sub-sectors can be introduced by the Nigerian government and the CBN to boost lending to futile economic sectors. In line with the ongoing, loans will become more attractive to deficit units and the role of banks in process of economic growth by supplying loans will become active. Consequently, individual and institutional investors, particularly SMEs will have easier access to loans in order to foster investment in different sub-sectors of the Nigerian economy. However, the continuous existence of conflict between monetary and fiscal policy in Nigeria will be a key challenge to these implementation strategies. In this regard, this study argues that the starting point in solving the passive role of banks in the growth process in Nigeria is to address the conflict between monetary and fiscal policy in Nigeria.

#### 7.4 Achievement of Study Objectives and Research Questions

In response to the research objectives highlighted in the first chapter of this thesis, this section provides an outline of how the research objectives have been fulfilled in relation to the topic under investigation as shown in Table 7.1.

**Table 7.1: Achievement of Study Objectives**

S/N	Research Objective	How has it been achieved?	Chapter
1	To explore and discuss the bank lending channel and theoretical views on financial systems.	This thesis provides a comprehensive discussion and argument about bank lending channel and financial intermediation and bank lending using theories and outcome of existing empirical studies. As such, this chapter explores the bank lending channel and financial intermediation theory, discusses the 5Cs of good and bad credit. In this regard, the theoretical underpinning of the study has been well established in fulfilment of this objective.	2
2	To explore and review theories of economic growth.	Further to the previous objective, this thesis also reviews and evaluates the theories of economic growth with empirical studies. The relevance of this chapter to the study follows the argument of Odedokun (1996) that studies on finance-growth lack theoretical underpinning of economic growth.	2

		As such, this chapter reviews the early concepts of growth (mercantilism and physiocracy), classical growth theories, innovative growth theory, Keynesian and post-Keynesian growth theories and neo-classical growth theories (exogenous and endogenous). Hence, reviewing the theories of economic growth further establishes additional theoretical framework for this study in fulfilment of this objective.	
3	To develop suitable conceptual framework which shows the relationship between sectoral bank lending and economic growth.	Based on objectives 1 and 2, this thesis develops a suitable conceptual framework using theories and empirical evidence. As such, this study develops a schematic diagram to establish the relationship between sectoral bank lending and economic growth. The developed conceptual framework in this study is regarded as <b>'The Flow of Lending'</b> . Consequently, this conceptual framework has helped to fulfil this research objective.	2
4	To investigate the Nigerian economy as a case study with analysis of its sectoral bank lending.	This thesis provides a detailed investigation of Nigeria as a case study for this study. As such, this thesis examines macroeconomic the historical background of	4

		Nigeria with sectoral allocation of bank lending, explores the macroeconomic outlook of Nigeria, discusses the evolution of banking industry and economic sectors in Nigeria, and analysed sectoral contribution of economic sectors to real GDP. In this regard, the research objective has been adequately fulfilled.	
5	To develop suitable empirical models for aggregated and disaggregated sectors by building on relevant theories and existing empirical studies.	In line with theories and empirical studies, this thesis particularly builds on the study of Odedokun (1996), by developing robust empirical models as a contribution to finance-growth nexus. As such, this thesis develops aggregated and disaggregated sectors models to aid the empirical contribution to knowledge.	3
6	To empirically investigate the relationship and causality between sectoral bank lending and economic growth in Nigeria using aggregated or sectors data.	Based on the aggregated or sectors model, this thesis investigates relationship and causality between sectoral bank lending and economic growth in Nigeria using statistical analysis. Also, this thesis performs diagnostic tests to examine the fitness of the empirical model and robustness of statistical estimates. Additionally, this thesis provides discussion of empirical findings in	5



		relation to existing theories and studies.	
7	To empirically investigate the relationship and causality between sectoral bank lending and economic growth in Nigeria using disaggregated or sub-sectors data.	Based on the disaggregated or sub-sectors model, this thesis investigates relationship and causality between sectoral bank lending and economic growth in Nigeria using statistical analysis. Also, this thesis performs diagnostic tests to examine the fitness of the empirical model and robustness of statistical estimates. Additionally, this thesis provides discussion of empirical findings in relation to existing theories and studies.	6
8	To proffer suggestions and recommendations on the banking industry and economic growth in Nigeria based on the research findings.	Following the empirical tests and discussion of findings. This thesis outlines some policy recommendations with implementation strategies on both the Nigerian banking industry and economic growth. Consequently, outlining policy recommendations based on the outcome of the study has helped to achieve this objective.	7

Table 7.1 above provides an outline of how the study objectives in this thesis have been achieved. These highlighted objectives are themes which provide a connection to suitably answer the identified research questions in the first chapter of this thesis. At this juncture, it is pertinent to assert that the selection of suitable research methodological framework for this study has aided achievement of research questions. As such, the achievements of the research questions in this study are outlined henceforward.

**Research question one:** is there a positive and statistically significant relationship between growth in bank lending to economic sectors and economic growth in Nigeria?

**How has research question one been achieved in this study:** based on the long-run relationship test results, this study applies the ARDL-ECM and VAR models to investigate relationship among the variables in the empirical models. Using aggregated data or sectors model, this study reveals that there is no positive and statistically relationship between variables in the aggregated sectors model and economic growth in Nigeria. Using disaggregated or sub-sectors models, this study reveals positive and statistically significant relationship between gREC and gY (model 1), between gTRC and gY (model 3), in the long run. On the other hand, this study reveals positive and statistically significant relationship between gMAN and gY (model 1), between gPPF and gY, gPPF at lag 2, and gPPF at lag 3 (model 3), in the short run.

**Research question two:** what is the direction of causality between growth in bank lending to economic sectors and economic growth in Nigeria?

**How has research question two been achieved in this study:** this thesis applies Wald test to examine causality among variables in the empirical models. For aggregated data or sectors model, this study reveals that there is no causality running from growth in bank lending to aggregated sectors and economic growth in Nigeria. However, there is unidirectional causality running from economic growth to growth in labour, economic growth to growth in human capital, and economic growth to bank lending to production sector.

For disaggregated data or sub-sectors model, model 1 shows bidirectional causality between gY and gL; and between gY and gAFF. Nonetheless, there is a unidirectional causality running from gY to gK, and gY to gH, while there is no direction of causality between other variables in the model and economic growth in Nigeria. For model 2, there is no direction of causality between growth in aggregate bank lending to sub-

sectors in the general commerce model and economic growth in Nigeria. For model 3, there is a unidirectional causality running gL to gY, gTRC to gY, gCFI to gY, and gY to gK, while there is no direction of causality between other variables in the model and economic growth in Nigeria. For model 4, there is a unidirectional causality running gY to gK, gY to gH, and gY to gPPF, while there is no direction of causality between other variables in the model and economic growth in Nigeria.

**Research question three:** to what extent does growth in bank lending to economic sectors contribute to economic growth in Nigeria?

**How has research question three been achieved in this study:** the contribution of each independent variable to economic growth in Nigeria is measured by the  $\bar{R}^2$  (coefficient of determination) of the appropriate estimation models. As such, aggregated data or sectors model account for 46.14% total variation in economic growth in Nigeria. For disaggregated data or sub-sectors, the  $\bar{R}^2$  (coefficient of determination) show that sub-sectors in the production, general commerce, services and 'others' sectors account for 63.28%, 22.70%, 57.15% and 56.82%, total variation in economic growth in Nigeria respectively.

## 7.5 Contributions of the Study to Knowledge

### 7.5.1 Theoretical Contribution

This study has been conducted with the motive to increase frontier of knowledge in economics. To attain a doctoral level, this study contributes to theory and empirical investigation, and practical knowledge on finance-growth nexus. As regards theoretical and empirical contribution, this study integrates the views of seminal studies on finance-growth such as Bagehot (1873), Schumpeter (1911), Robinson (1952), Patrick (1966) and Lucas (1988), with bank lending view of Bernanke and Blinder (1988) and Kashyap and Stein (1994). Additionally, in line with the argument of Odedokun (1996), this study considers economic growth theories in order to develop robust empirical models. In this regard, the main argument underpinning this study is that transmission of bank lending to the real economy is better explained through lending to different sectors in an economy.

Consequently, as a contribution to knowledge and literature of bank lending and economic growth, this study develops a framework regarded as **'The Flow of Lending'** depicting how bank lending flow through economic sectors to enhance economic growth. This framework builds on existing theories and provides strong

theoretical framework for this study, which has helped to provide suitable answers to the identified research questions in this thesis. Consequently, as a contribution to theory, 'The Flow of Lending' is expected to serve as a renowned framework for future academic studies and to enhance teaching students on the topic in a similar continuum to 'the circular flow of income'. Additionally, the framework is useful to monetary authorities and professionals as it provides a clear understanding towards making sectoral bank lending decisions within an economy.

### **7.5.2 Empirical Contribution**

The empirical contribution of this study is embedded in the developed robust empirical models by building on the work of Odedokun (1996). To the very best of the researcher's knowledge, this study is the first to examine impact of bank lending on economic growth from a sectoral perspective. Hence, the empirical contribution of this study develops alternative approach to investigate finance-growth nexus through bank lending channel by integrating proxies of economic growth with sectoral bank lending in the Nigerian economy. The empirical models developed in this thesis provides more understanding about finance-growth nexus, especially the special role of banks as financial intermediaries.

### **7.5.3 Practical Contribution**

On the other hand, the robust empirical models of this study contribute to banking practice in Nigeria by evidencing different causality views on finance-growth: growth-led finance or demand-following hypothesis and neutrality hypothesis. As such, this study does not find evidence of finance-led growth or supply-leading hypothesis in Nigeria. Hence, to Nigerian commercial banks and CBN, these results depict ineffective implementation of bank lending practice in Nigeria despite undergoing different banking eras since 1892. Additionally, the outcome of this study contradicts theoretical significance of bank-based view in enhancing economic growth among developing countries. These assertions explain why the current post-consolidation era focuses mainly on enhancing finance-led growth view by introducing "The Project Alpha Initiative" in 2009. Such futile bank lending practice can be attributed to incessant high MPR and stringent implementation of 5Cs of credit by commercial banks on borrowers. Consequently, bank lending practice in Nigeria by commercial banks should be revised in order to encourage borrowing by households and firms. Be that as it may, the contribution of this study to practice serves as an eye-opener to commercial banks and CBN. As such, this study reveals the need to make amendments to existing monetary policies in Nigeria to facilitate effective bank-based view.

## 7.6 Limitations of the Study

In this study, the research objectives and questions have been fulfilled and answered respectively. However, there are few limitations embedded in this study which will be outlined in this section. First, the theoretical contribution and empirical analysis in this study focuses only on bank-based theoretical views without considering proxies to examine market-based view. Second, this study focuses only on Nigeria as a developing country with appropriate justification for selecting the country. It is pertinent to highlight that this study enables the researcher to conduct an extensive research about existing sectors in the Nigerian economy. However, the scope of the study is limited to only one country (Nigeria).

Considering the adopted research methodology, it is pertinent to consider the use of other methods for this study. As such, due to the underlying research philosophy of this study as already justified, it can be deduced that other research methods are not suitable for studies which require investigating relationship and causality among variables. In this regard, this study is limited to the use of a mono-method statistical analysis in order to achieve the research aim.

## 7.7 Areas for Further Research

There are vast opportunities for future research in investigating the impact of finance on economic growth in different countries, as the topic is 'hot cake' in the field of economics. However, few possible future areas emanating from findings of this study will be highlighted. Based on the highlighted limitations of this study above, further research could be conducted on some areas. For instance, a future study could focus on contributing to empirical evidence of market-based view in Nigeria by investigating its relationship and causal effects on economic growth in Nigeria as an alternative view of the financial system. The significance of such study follows the theory of Arrow and Debreu (1954) which emphasises that perfections in financial markets are perfect make financial intermediaries become redundant.

Additionally, the empirical model of this study with theoretical underpinning of economic growth theories can be extended to investigate influence of sectoral bank lending on economic growth in other countries. For instance, the empirical model can be adopted to investigate single countries, selected countries using a panel data analysis. In this regard, the research methodology of such future studies as highlighted will take a similar framework with this study to fulfil the aim of such studies. Thus, an unsuitable research methodological framework will jeopardise the empirical outcome of such studies.

## 7.8 Final Conclusion

This chapter is the last of the thesis. As such, the chapter has provided summary of key findings, policy recommendations, achievement of study objectives and research questions, contribution of the study to knowledge, limitations of the study, areas for further research and potential publications. In this regard, this chapter is linked to the first chapter as it shows how the aim of the study has been achieved at a doctoral level in economics/banking. Particularly, this study has highlighted the relevance of the adopted research methodological framework to the study which has aided the researcher throughout the research process. By and large, the research process has been an interesting journey. Based on the saying 'what is worth doing, is worth doing well', this study has been well conducted using tangible and intangible resources, and appropriate research skills in order to increase the frontier of knowledge.

## REFERENCES

- Abosedra, S., and Sita, B. (2018). Finance-growth Volatility Nexus: Evidence from Lebanon. *Asian Economic and Financial Review*, 8(4), 466-477.
- Abuka, C., Alinda, R., Minoiu, C., Peydro, J. and Presbitero (2019). Monetary Policy and Bank Lending in Developing Countries: Loan applications, rates and real effects. *Journal of Development Economics*, 139, 185-202.
- Acha, I. (2011). Interest Rates in Nigeria: An Analytical Perspective. *Research Journal of Finance and Accounting*, 2(3), 71-81.
- Achirga, A. (2021). Hundreds of Nigerian union members protest over possible minimum wage change. [Hundreds of Nigerian union members protest over possible minimum wage change | Reuters](#)
- Acton, H. (1935). The Correspondence Theory of Truth. *Proceedings of the Aristotelian Society*, 35(1), 177-194.
- Adebayo, A. A. (2013). Youths' Unemployment and Crime in Nigeria: A Nexus and Implications for National Development. *International Journal of Sociology and Anthropology*, 5(8), 350-357.
- Adedeji, A., Ikumapayi, T., Taiwo, J., and Akpevwe, G. (2018). The Evaluation of Credit Management on the Performance of Small Scale Enterprises in Nigeria. *5th International Conference on Education and Social Sciences*, (pp. 110-118).
- Adediran, O., Ekejiuba, P., Matthew, O., and Adegboye, F. (2017). Co-Integration Analysis of Financial Intermediation and Economic Growth in Nigeria. *Journal of Internet Banking and Commerce*, 22(8), 1-12.
- Adefeso, H., Egbetunde, T., and Alley, I. (2013). Stock Market Development and Growth In Nigeria: A Causal Analysis . *Arabian Journal of Business and Management Review*, 2(6), 78-94.
- Adeyemo, I. (2018). *Nigeria record 19.7% growth in total trade in first quarter 2018*. Retrieved from <https://www.premiumtimesng.com/news/more-news/271505-nigeria-records-19-7-growth-in-total-trade-in-first-quarter-2018-nbs.html>
- Adeyeye, P., Fapetu, O., Aluko, O., and Migiro, S. (2015). Does Supply-leading Hypothesis hold in a Developing Economy? A Nigerian Focus . *Procedia Economics and Finance*, 30, 30-37.
- Aditya, A., and Acharyya, R. (2015). Trade liberalisation and export diversification. *International Review of Economics and Finance*, 39(2), 390-410.
- Adu, G., Marbuah, G., and Mensah, J. (2013). Financial Development and Economic Growth in Ghana: Does the Measure of Financial Development Matter? *Review of Development Finance*, 3, 192-203.
- Affandi, Y., Anugrah, D., and Bary, P. (2019). Human capital and economic growth across regions: a case study in Indonesia. *Eurasian Economic Review*, 9, 331-347.

African Development Bank. (2017). *African Economic Outlook: Entrepreneurship and Industrialisation*. Retrieved from [https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEO\\_2017\\_Report\\_Full\\_English.pdf](https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/AEO_2017_Report_Full_English.pdf)

African Development Bank. (2018). *Nigeria Economic Outlook*. Retrieved from <https://www.afdb.org/en/countries/west-africa/nigeria/nigeria-economic-outlook/>

Afrin, S. (2017). Monetary Policy Transmission in Bangladesh: Exploring the Lending Channel. *Journal of Asian Economics*, 49, 60-80.

Aghion, P., and Akcigit, U. (2015). *Innovation and Growth: The Schumpeterian Perspective*. Retrieved from <http://www.coeure.eu/wp-content/uploads/Innovation-and-Growth.pdf>

Aghion, P., Howitt, P., and Mayer-Foulkes, D. (2005). The Effect of Financial Development on Convergence: Theory and Evidence. *Quarterly Journal of Economics*, 120(1), 173-222.

Ahuma-Young, V. (2016). Poverty: 112m Nigerians Live Below Poverty Line. *Vanguard*.

Akbas, Y. (2015). Financial Development and Economic Growth in Emerging Market: Bootstrap Panel Causality Analysis. *Theoretical and Applied Economics*, XXII(3), 171-186.

Akeju, K. F., and Olanipekun, D. B. (2014). Unemployment and Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, 5(4), 138-144.

Akerlof, G. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 84(3), 488-500.

Akingunola, R. (2011). Small and Medium Scale Enterprises and Economic Growth in Nigeria: An Assessment of Financing Options. *Pakistan Journal of Business and Economic Review*, 2(1), 78-97.

Akinlo, E., and Akinlo, O. (2009). Stock Market Development and Economic Growth: Evidence from Seven Sub-Sahara African Countries. *Journal of Economics and Business*, 61, 162-171.

Akpan, E., Nwosu, E., and Eweke, G. (2017). Causality between Non-oil Export, Financial Sector Development and Economic Growth: Evidence from Nigeria. *Journal of Mathematical Finance*, 7, 39-53.

Alabede, J. (2012). The Intervening Effect of Global Financial Condition on the Determinants of Bank Performance: Evidence from Nigeria. *Accounting and Finance Research*, 1(2), 161-176.

Alake, T. (2018). *Polaris to Take Over Assets, Liabilities of Skye Bank Nigeria*. Retrieved from <https://www.bloomberg.com/news/articles/2018-09-22/polaris-to-takeover-assets-liabilities-of-skye-bank-nigeria>



- Albassam, B. (2015). Economic Diversification in Saudi Arabia: Myth or Reality? *Resource Policy*, 44(2), 112-117.
- Alexiou, C., Vogiazas, S., and Nellis, J. (2018). Reassessing the Relationship between the Financial Sector and Economic Growth: Dynamic Panel Evidence. *International Journal of Fin. Econ.*, 23, 155-173.
- Alin, A. (2010). Multicollinearity. *Focus Article: John Wiley and Sons, Inc*, 2(5), 370-374.
- All Africa. (2014). *Growing Opportunities in Diverse Sectors of Nigerian Economy*. Retrieved from <http://search.proquest.com.lcproxy.shu.ac.uk/docview/1555329426/fulltext/C8410E2A163E473CPQ/1?accountid=13827>
- Allen, F., and Gale, D. (1999). Diversity of Opinion and the Financing of New Technologies. *Journal of Financial Intermediation*, 8(1-2), 68-89.
- Allen, F., and Gale, D. (2000). *Comparing Financial Systems*. Cambridge: MIT Press.
- Allen, F., and Santomero, A. (1997). The theory of Financial Intermediation. *Journal of Banking and Finance*, 21, 1461-1485.
- Al-Nasser, O. (2015). Stock Markets, Banks and Economic Growth: Evidence from Latin American Countries. *International Journal of Economics and Finance*, 7(2), 100-112.
- Alom, K. (2018). Financial Development and Economic Growth Dynamics in South Asian Region. *The Journal of Developing Areas*, 52(4), 47-66.
- Altunbas, Y., Fazylov, O., and Molyneux, P. (2002). Evidence on the Bank Lending Channel in Europe. *Journal of Banking and Finance*, 26, 2093-2110.
- Altunbas, Y., Gambacorta, L., and Marques, D. (2009). Securitization and the Bank Lending Channel. *European Economic Review*, 53(8), 996-1009.
- AMCON. (2019). *AMCON: Who we are*. Retrieved from <http://amcon.com.ng/about-us.php>
- Aminu, I., and Shariff, M. (2015). Influence of Strategic Orientation on SMEs Access to Finance in Nigeria. *Asian Social Science*, 11(4), 298-309.
- Amu, C., Nwezeaku, N., and Akujuobi, A. (2015). Impact of Capital Market Growth on Economic Growth and Development in Nigeria. *American Journal of Marketing Research*, 1(3), 93-98.
- Angelopoulou, E., and Gibson, H. (2007). *The Balance Sheet Channel of Monetary Policy Transmission: Evidence from the UK*. Athens: Bank of Greece, Economic Research Department.

- Anyanwu, S., Adam, J., Obi, B., and Yelwa, M. (2015). Human Capital Development and Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, 6(14), 16-26.
- Apaitan, T., Disyatat, P., and Manopimoke, P. (2020). Thai inflation dynamics: a view from disaggregated price data. *Economic Modelling*, 84, 117-134.
- Arize, A., Kalu, E., and Nkwor, N. (2017). Banks versus markets: Do they Compete, Complement or Co-evolve in the Nigerian Financial System? An ARDL Approach. *Research in International Business and Finance*, 1-8.
- Arnold, G. (2012). *Modern Financial Markets and Institutions: A Practical Perspective*. England : Pearson.
- Arrow, K. (1962). The Economic Implications of Learning by Doing. *The Review of Economic Studies*, 29(3), 155-173.
- Arrow, K., and Debreu, G. (1954). Existence of an Equilibrium for a Competitive Economy. *Econometrica*, 22(3), 265-290.
- Aslan, A., and Altinoz, B. (2020). The impact of natural resources and gross capital formation on economic growth in the context of globalisation: evidence from developing countries on the continent of Europe, Asia, Africa and America. *Environmental Science and Pollution Research*, 4, 1-12.
- Augustine, U., and Otaru, P. (2011). Legal-based Financial Structure and Long-Run Growth: Evidence from Nigeria . *Journal of Applied Finance and Banking*, 1(2), 1-17.
- Aysun, U., and Hepp, R. (2013). Identifying the Balance Sheet and the Lending Channels of Monetary Transmission: A Loan-level Analysis. *Journal of Banking and Finance*, 37, 2812-2822.
- Azam, M., Haseeb, M., Samsi, A., and Raji, J. (2016). Stock Market Development and Economic Growth: Evidences from Asia-4 Countries. *International Journal of Economic and Financial Issues*, 6(3), 1200-1208.
- Azzouni, J. (2001). Truth Via Anaphorically Unrestricted Quantifiers. *Journal of Philosophical Logic*, 30(1), 329-354.
- Bakare, M. (2015). Demography and Medical Education among Nigerian Final Year Medical Students-Implication for Regional and Human Resource Development. *Health Education Research and Development*, 3(3), 1-5.
- Ball, L., and Romer, D. (1990). Real Rigidities and the Non-Neutrality of Money. *The Review of Economic Studies*, 57(2), 183-203.
- Balouga, J. (2009). The Global Financial Crisis and the Oil and Gas Sector of the Nigerian Economy. *International Association for Energy Economics Journal*, 2(3), 12-24. Retrieved from <https://mpa.ub.uni-muenchen.de/42664/>

Barcenilla-Visus, S., and Lopez-Pueyo, C. (2018). Inside Europe: human capital and economic growth revisited. *Empirica*, 45(4), 821-847.

Barro, R. J., and Sala-i-Martin, X. (1995). *Technological Diffusion, Convergence and Growth*. Cambridge, MA: National Bureau of Economic Research.

Barros, C., and Caporale, G. (2012). Banking Consolidation in Nigeria, 2000-2010. *Mais Working Papers CEsA Disponiveis em*, 99, 1-19.

Bayraktar-Saglam, B. (2016). The Stages of Human Capital and Economic Growth: Does the Direction of Causality Matter for the Rich and the Poor? *Social Indicators Research*, 127(1), 243-302.

BBC. (1999). *Nigeria: A History of Coups*. Retrieved from <http://news.bbc.co.uk/1/hi/world/africa/83449.stm>

BBC. (2008). *Your Credit Rating Explained*. Retrieved from <http://news.bbc.co.uk/1/hi/business/2963580.stm>

BBC. (2012). *Nigerians Living in Poverty Rise to Nearly 61%*. Retrieved from <http://www.bbc.co.uk/news/world-africa-17015873>

BBC. (2017). *Nigeria and South Africa both Come out of Recession*. Retrieved from <http://www.bbc.co.uk/news/world-africa-41162184>

Beck, T. (2010). Financial Development and Economic Growth: Stock Markets Versus Banks? . *Private Sector and Development, Proparco's Magazine*(5 (March)).

Beck, T., Demirguc-Kunt, A., Peria, M., and Soledad, M. (2008). Banking Services for Everyone? Barriers to Bank Access and Use Aorund the World. *The World Bank Economic Review*, 22(3), 397-430.

Beck, T., Levine, R., and Loayza, N. (1999). *Finance and the Sources of Growth*. Washington: World Bank .

Bell, E., Bryman, A., and Harley, B. (2019). *Business Research Methods*. 5th ed., Oxford: Oxford University Press.

Bencivenga, V., and Smith, B. (1991). Financial Intermediation and Endogenous Growth. *The Review of Economic Studies*, 58(2), 195-209.

Benson, G., and Smith, C. (1976). A Ttransaction Cost Approach to the Theory of Financial Intermediation. *Journal of Finance*, 31(2), 215-231.

Berger, A., and Udell, N. (2002). Small Business Credit Availability and Relationship Lending: The Importance of Organisational Structure. *Economic Review*, 112, 32-53.

Bernanke, B., and Blinder, A. (1988). Credit, Money and Aggregate Demand. *American Economic Review*, 78(2), 435-439.

Bernanke, B., and Blinder, A. (1992). The Fed Funds Rate and the Channels of Monetary Policy. *American Economic Review*, 82, 901-921.

- Bernanke, B., and Gertler, M. (1995). Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives*, 9(1), 27-48.
- Bhattacharya, S., and Chiesa, G. (1995). Proprietary Information, Financial Intermediation and Research Incentives. *Journal of Financial Intermediation*, 4(4), 328-357.
- Bhaumik, S., Dang, V., and Kutan, A. (2011). Implications of bank ownership for the credit channel of monetary policy transmission: Evidence from India. *Journal of Banking and Finance*, 35, 2418-2428.
- Biafran.org. (2018). *Amalgamation Photos*. Retrieved from <https://biafran.org/amalgamation-photos/>
- Bils, M., and Klenow, P. (2000). Does Schooling Cause Growth? . *American Economic Review*, 90(5), 1184-1208.
- Bist, J. (2018). Financial Development and Economic Growth: Evidence from a Panel of 16 African and Non-African Low income Countries . *Cogent Economics and Finance*, 6(1449780), 1-17.
- Blackburn, S. (1984). *Spreading the Word: Groundings in the Philosophy of Language*. Oxford: Clarendon Press.
- Blaikie, N. (2007). *Approaches to Social Enquiry*. Cambridge: Polity Press.
- Blaikie, N. (2010). *Designing Social Research: The Logic of Anticipation* (2nd ed.). Cambridge: Polity Press.
- Blanshard, B. (2001). Coherence as the Nature of Truth. In *The Nature of Truth. Classic and Contemporary Perspectives* (pp. 103-121). Cambridge: The MIT Press.
- Blinder, A. (1987). Credit Rationing and Effective Supply Failures. *The Economic Journal*, 97(1), 327-352.
- Boot, A., and Thakor, A. (1997a). Financial System Architecture. *Review of Financial Studies*, 10(3), 693-733.
- Boot, A., and Thakor, A. (1997b). Banking Scope and Financial Innovation. *Review of Financial Studies*, 10(4), 1099-1131.
- Bougheas, S., Mizen, P., and Yalcin, C. (2006). Access to External Finance: Theory and Evidence on the Impact of Monetary Policy and Firm-specific Characteristics. *Journal of Banking and Finance*, 30, 199-227.
- Boyd, J., and Smith, B. (1998). The Evolution of Debt and Equity Markets in Economic Development. *Economic Theory*, 12(3), 519-560.
- Brainard, W. (1964). Financial Intermediaries and a Theory of Monetary Control. *Yale Economic Essay*, 4, 431-482.

- Brechling, F., and Lipsey, R. (1963). Trade Credit and Monetary Policy. *The Economic Journal*, 73(292), 618-641.
- Brei, M., and Schclarek, A. (2013). Public Bank Lending in Times of Crisis. *Journal of Financial Stability*, 9, 820-830.
- Brei, M., and Schclarek, A. (2015). A Theoretical Model of Bank Lending: Does Ownership matter in times of crisis? *Journal of Banking and Finance*, 50, 298-307.
- Breusch, T.S. (1978). Testing for autocorrelation in dynamic linear models. *Australian Economic Papers*, 17 (31), 334-355.
- Breusch, T. S. and Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica* 47 (5), 1287–1294.
- Brunner, K., and Meltzer, A. (1963). The Place of Financial Intermediaries in the Transmission of Monetary Policy. *The American Economic Review*, 53(2), 372-382.
- Brunner, K., and Meltzer, A. (1972). Money, Debt and Economic Activity. *Journal of Political Economy*, 80(5), 951-977.
- Bryman, A. (2016). *Social Research Methods* (5th ed.). Oxford: Oxford University.
- Bryman, A., and Bell, E. (2015). *Business Research Methods* (4th ed.). Oxford: Oxford University Press.
- Calderon, C., and Liu, L. (2003). The Direction of Causality Between Financial Development and Economic Growth. *Journal of Development Economics*, 72, 321-334.
- Cameron, A. C. and Trivedi P.K. (1990). The information matrix test and its applied alternative hypotheses. Working paper 372, University of California–Davis, Institute of Governmental Affairs.
- Campbell, J. (2018). *Lord Lugard Created Nigeria 104 Years Ago*. Retrieved from <https://www.cfr.org/blog/lord-lugard-created-nigeria-104-years-ago>
- Carbo-Valverde, S., Rodriguez-Fernandez, F., and Udell, F. (2009). Bank Market Power and SME Financing Constraints . *Review of Finance*, 13, 309-340.
- Carbo-Valverde, S., Rodriguez-Fernandez, F., and Udell, G. (2016). Trade credit, the financial crisis and firms access to finance. *Journal of Money, Credit and Banking*, 48(1), 113-143.
- Casey, E., and O'Toole, C. (2014). Bank Lending Constraints, Trade Credit and Alternative Financing During the Financial Crisis: Evidence from European SMEs. *Journal of Corporate Finance*, 27, 173-193.
- Cass, D. (1965). Optimum Growth in an Aggregative Model of Capital Accumulation. *Review of Economic Studies*, 32(3), 233-240.

Castello-Climent, A. (2019). The age structure of human capital and economic growth. *Oxford bulletin of economics and statistics*, 81(2), 0305-9049.

CBN. (2007). *BOFIA 1991 As Amended in 1997, 1998, 1999 and 2002*. Retrieved from <https://www.cbn.gov.ng/OUT/PUBLICATIONS/BSD/1991/BOFIA.PDF>

CBN. (2009). *Annual Report and Statement of Accounts for the Year Ended 31st December 2009*. Retrieved from <https://www.cbn.gov.ng/OUT/2010/PUBLICATIONS/REPORTS/RSD/Link%20Files/PART%20ONE.pdf>

CBN. (2011). *Understanding Monetary Policy Series No 3*. Retrieved from <https://www.cbn.gov.ng/out/2012/ccd/series%203.pdf>

CBN. (2011). *Understanding Monetary Policy Series No. 1*. Retrieved from <http://www.cbn.gov.ng/Out/2012/CCD/Series%201.pdf>

CBN. (2016). *Education in Economic Series No. 3- Interest Rate*. Retrieved from <https://www.cbn.gov.ng/out/2017/rsd/cbn%20education%20in%20economics%20series%20no.%203%20interest%20rate.pdf>

CBN. (2016). *Financial Stability Report*. Retrieved from [https://www.cbn.gov.ng/out/2017/fprd/fsr%20december%202016%20\(2\).pdf](https://www.cbn.gov.ng/out/2017/fprd/fsr%20december%202016%20(2).pdf)

CBN. (2018). *CBN Educational Resources*. Retrieved from <https://www.cbn.gov.ng/Educational.asp>

CBN. (2019). *CBN Educational Resources- Interest Rates Behaviours and Monetary Policy Response*. Retrieved from <https://www.cbn.gov.ng/Out/EduSeries/Interest%20rates%20behaviors%20and%20monetary%20policy%20response.pdf>

CBN. (2019). *List of Financial Institutions*. Retrieved from <https://www.cbn.gov.ng/Supervision/Inst-DM.asp>

CBN (2020). Crude Oil Price (US\$/Barrel), Production (mbd) and Export (mbd). <https://www.cbn.gov.ng/rates/crudeoil.asp>

Chang, V., Chen, Y., and Xiong, C. (2018). Dynamic interaction between higher education and economic progress: a comparative analysis of BRICS countries. *Information Discovery and Delivery*, 46(4), 225-238.

Charles, A., Mesagan, E., and Saibu, M. (2018). Resource Endowment and Export Diversification: Implications for Growth in Nigeria. *Studies in Business and Economics*, 13, 29-40.

Chatterjee, S., and Hadi, S. (2012). *Regression Analysis by Example* (5th Edition ed.). New York: Hoboken, NJ.



Chen, X., and Hu, C. (2011). Trade credit, traditional credit and monetary policy transmissions: Evidence from Chinese firms. *IEEE Conference* (pp. 1-6). IEEE Conference Publications.

Chibuikwe, U. (2000). Banking Regulation in an Era of Structural Adjustment: The Case of Nigeria. *Journal of Financial Regulation and Compliance*, 8(2), 157-159.

Chigbu, U. (2005). The case of agriculture as the only saviour to the Nigeria's dying economy. <http://www.nigerianvillagesquare.com/articles/guest/2005/03/agric-as-only-saviour-to.html>

Chileshe, P. (2018). Banking Structure and the Bank Lending Channel of Monetary Policy Transmission: Evidence from panel data methods. *Quantitative Finance and Economics*, 2(2), 497-524.

Chouchene, M., Ftiti, Z. and Khiari, W. (2017). Bank-to-bank Lending Channel and the Transmission of Bank Liquidity Shocks: Evidence from France. *Research in International Business and Finance*, 39, 940-950.

Christiano, L. (1992). Searching for a Break in GNP. *Journal of Business Economics and Statistics*, 10, 237-250.

Christiano, L., and Eichenbaum, M. (1992). *Liquidity Effects, Monetary Policy and the Business Cycle*. Cambridge, Massachusetts: National Bureau of Economic Research.

Chu, C., and White, H. (1992). A Direct Test for Changing Trend. *Journal of Business Economics and Statistics*, 10, 289-299.

Cihak, M., Demirguc-Kunt, A., Feyen, E., and Levine, R. (2012). *Benchmarking Financial Systems*. Washington, D.C: The World Bank Policy Research, The World Bank.

Claessens, S. (2006). Access to Financial Services: A Review of the Issues and Public Policy Objectives. *World Bank Research Observer*, 21(2), 207-240.

Cline, A. (2011). *Pragmatic Theory of Truth*. Retrieved from <http://atheism.about.com/od/philosophyepistemology/a/Pragmatic.htm>

Cline, W. (2015). *Too Much Finance or Statistical Illusion?* Peterson Institute for International Economics.

Collis, J., and Hussey, R. (2014). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students* (4th ed.). Hampshire: Palgrave Macmillan.

Corbin, J., and Strauss, A. (2015). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (4th ed.). Thousand Oaks, CA: Sage.

Cornwall, J. (2015). *Economic Growth*. Retrieved from [http://shu-primo.hosted.exlibrisgroup.com/primo\\_library/libweb/action/display.do?tabs=viewOn](http://shu-primo.hosted.exlibrisgroup.com/primo_library/libweb/action/display.do?tabs=viewOn)

lineTabandct=displayandfn=searchanddoc=TN\_britnica106198andindx=1andreclds=TN\_britnica106198andrecldxs=0andelementId=0andrenderMode=poppedOutanddisplayMode=fullandfrbrVersion=andfrbg=andr

Creswell, J., and Crewell, J. (2018). *Research Design* (5th ed.). London: SAGE.

Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage.

Cui, J., Jo, H., and Na, H. (2018). Does Corporate Social Responsibility affect Information Asymmetry? *Journal of Business Ethics*, 148, 549-572.

David, M. (2009). Truth-Making and Correspondence. In E. Lowe, and A. Rami (Eds.), *Truth and Truth-Making* (pp. 137-157). Stocksfield: McGill-Queen's University Press.

David, M. (2015). *The Correspondence Theory of Truth*. Retrieved from <https://plato.stanford.edu/entries/truth-correspondence/>

Davidson, D. (1969). True to the Facts. *The Journal of Philosophy*, 66(1), 748-764.

de Bondt, G. (1998). *Credit Channels in Europe: Bank-level panel data analyses*. Netherlands: De Nederlandsche Bank.

de Bondt, G. (1999). *Credit channels in Europe: Cross-country investigation*. Netherlands: De Nederlandsche Bank.

Demirguc-Kunt, A., and Levine, R. (1999). *Bank-Based and Market-Based Financial Systems: Cross-country Comparisons*. Minnesota: Development Research Group, The World Bank.

Demirguc-Kunt, A., and Maksimovic, V. (1996). Stock Market Development and Financing Choices of Firms. *World Bank Economic Review*, 10, 341-369.

Denderski, P. and Paczos, W (2020). Foreign Banks and the Bank Lending Channel. *Economic Inquiry*. <https://doi.org/10.1111/ecin.12942>

Denzin, N., and Lincoln, Y. (2018). *The SAGE Handbook of Qualitative Research* (5th ed.). Thousand Oaks, CA: SAGE.

DeVaus, D. (2014). *Surveys in Social Research* (6th ed.). Abingdon: Routledge.

Dewatripont, M., and Maskin, E. (1995). Credit and Efficiency in Centralized and Decentralized Economies. *Review of Economic Studies*, 62(4), 541-555.

Dewatripont, M., Rochet, J., and Tirole, J. (2010). *Balancing the Banks: Global Lessons from the Financial Crisis*. Princeton: Princeton University Press.

Deyshappriya, N. (2016). The Causality Direction of the Stock Market-Growth Nexus: Application of GMM Dynamic Panel Data and the Panel Ganger Non-Causality Tests. *Margin: The Journal of Applied Economic Research*, 10(4), 446-464.



- Diamond, D. (1984). Financial Intermediation and Delegated Monitoring. *Review of Economic Studies*, 51(3), 393-414.
- Diamond, D., and Dybvig, P. (1983). Bank Runs, Deposit Insurance and Liquidity. *Journal of Political Economy*, 91, 401-419.
- Diamond, D., and Rajan, R. (2001). Liquidity Risk, Liquidity Creation and Financial Fragility: A Theory of Banking. *Journal of Political Economy*, 109, 287-327.
- Diamond, P. (1965). National Debt in a Neoclassical Growth Model. *The American Economic Review*, 55(5), 1126-1150.
- Diaz-Bautista, A., and Gonzalez-Andrade, S. (2014). The Debate of the Modern Theories of Regional Economic Growth. *Ra Ximhai*, 10(6), 187-206.
- Dickey, D., and Fuller, W. (1979). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74, 427-431.
- Dickey, D., and Fuller, W. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica*, 49, 1057-1072.
- Diener, E., and Crandall, R. (1978). *Ethics in social and behavioral research*. University Chicago Press.
- Dochartaigh, N.O. (2012). *Internet Research Skills*, 3rd ed., London, Sage.
- Domar, E. (1946). Capital Expansion, Rate of Growth, and Employment. *Econometrica* 14 (2): 137–147
- Doya, D. (2016). *Nigeria Seeks \$7 Billion to Kick-Start Mining, Steel Industry*. Retrieved from <https://uk.finance.yahoo.com/news/nigeria-seeks-7-billion-kick-230100393.html>
- Dudovskiy, J. (2017). *Data Collection Methods*. Retrieved from <https://research-methodology.net/research-methods/data-collection/>
- Dummett, M. (1981). *Frege, Philosophy of Language*. Cambridge: Harvard University Press.
- Durbin, J. and Watson, G.S. (1950). Testing for Serial Correlation in Least Squares Regression: I. *Biometrika*, 37 (3/4), 409-428.
- Dutta, N., and Sobel, R. (2018). Entrepreneurship and human capital: The role of financial development. *International Review of Economics and Finance*, 57, 319-332.
- Easterby-Smith, M., Thorpe, R., Jackson, P., and Jaspersen, L. (2018). *Management and Business Research* (6th ed.). London: SAGE.
- Ebimobowei, A., and Sophia, J. (2011). Mergers and Acquisitions in the Nigerian Banking Industry: An Explorative Investigation. *The Social Sciences*, 6(3), 213-220.

Edwards, F. R. (1993). Financial Markets in Transition- or the Decline of Commercial Banking. In *Changing Capital Markets: Implications for Monetary Policy* . Federal Reserve Bank of Kansas City.

Eferakeya, I. (2014). Nigerian Small and Medium Scale Enterprises' Access to Finance: What is the Story since Bank Consolidation in 2005. *International Journal of Innovation and Applied Studies* , 6(4), 1111-1122.

Ehigiator, B. O. (2017). *The Service Sector in Nigeria: An Escalator for New Economic Growth*. Lund: Lund University.

Ekpenyong, D., and Nyong, M. (1992). Small and Medium-Scale Enterprises in Nigeria: Their Characteristics, Problems and Sources of Finance. *AERC Research Paper 16, African Economic Research Consortium*.

Ekundayo, K. (2018). *Manufacturing Sector in Nigeria 1998-2018: The Ups and Downs*. Retrieved from <https://www.dailytrust.com.ng/manufacturing-sector-in-nigeria-1998-2018-the-ups-and-downs.html>

El-Chaarani, H. (2014). The Impact of Financial Structure on the Performance of European Listed Firms. *European Research Studies*, 17(3), 103-124.

Enejoh, S. Y., and Tsauni, A. M. (2017). An Analytical Study of the Impact of Unemployment on Economic Growth in Nigeria (1970 to 2016). *IOSR Journal of Humanities and Social Sciences*, 22(11), 74-81.

Engle, R., and Granger, C. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. *Econometrica*, 55(2), 251-276.

Eniola, A., and Entebang, H. (2015). SME Firm Performance- Financial Innovation and Challenges. *Procedia-Social and Behavioural Sciences*, 195, 334-342.

Eregha, P. (2010). Interest Rate Variation and Investment Determination in Nigeria. *International Business Management*, 4(2), 41-46.

Eregha, P., and Mesagan, E. (2016). Oil resource abundance, institutions and growth: evidence from oil producing African countries. *Journal of Policy Modeling*, 38(1), 603-619.

Eweniyi, O. (2017). *Nigeria is Set to Become the Poverty Capital of the World by 2018*. Retrieved from <http://www.konbini.com/ng/lifestyle/nigeria-poverty-capital-world-2018/>

Ewubare, D. B., and Ushie, U. A. (2018). Unemployment and Economic Growth in Nigeria (1990 to 2016). *International Journal of Advanced Studies in Economics and Public Sector Management*, 6(2), 109-124.

Fabozzi, F., Modigliani, F., and Jones, F. (2010). *Foundations of Financial Markets and Institutions* (4th ed.). New Jersey: Pearson.

Fama, E. (1980). Banking in the Theory of Finance. *Journal of Monetary Economics*, 6(1), 39-57.

FAO. (2019). *Nigeria at a Glance*. Retrieved from <http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/>

Fashina, O., Asaleye, A., Ogunjobi, J., and Lawal, A. (2018). Foreign aid, human capital and economic growth nexus: Evidence from Nigeria. *Journal of International Studies*, 11(2), 104-117.

Favero, C., Giavazzi, F., and Flabbi, L. (1999). The Transmission Mechanism of Monetary Policy in Europe: Evidence from Banks' Balance Sheets. *NBER Working Paper No. 7231*.

Favero, C., Giavazzi, F., and Flabbi, L. (1999). *The Transmission Mechanism of Monetary Policy in Europe: Evidence from Banks' Balance Sheets*. Cambridge: National Bureau of Economic Research, Inc.

Feder, G. (1983). On Export and Economic Growth . *Journal of Development Economics*, 12(1), 59-73.

Ferrando, A., and Mulier, K. (2013). Do Firms use the Trade Credit Channel to Manage Growth? *Journal of Banking and Finance*, 37(8), 3035-3046.

Ferrara, A. (1987). A Critique of Habermas's Consensus Theory of Truth. 13(1), 39-67.

Ferreira, C. (2010). The Credit Channel Transmission of Monetary Policy in the European Union: A Panel Data Approach. *Banks and Bank Systems*, 5(2), 230-240.

Fethi, S., and Katircioglu, S. (2015). The Role of the Financial Sector in the UK Economy: Evidence from a Seasonal Cointegration Analysis. *Economic Research-Ekonomska Istrazivanja*, 28(1), 717-737.

Fieseler, C. (2011). On the Corporate Social Responsibility Perceptions of Equity Analysts. *Business Ethics: A European Review*, 20(2), 131-147.

Fischer, E., and Reuber, A. (2003). Support for Rapid-Growth Firms: A Comparison of the Views of Founders, Government Policymakers and Private Sector Resource Providers. *Journal of Small Business Management*, 41(4), 346-365.

Fischer, S. (2016). Monetary Policy, Financial Stability, and the Zero Lower Bound. *American Economic Review: Papers and Proceedings*, 106(5), 39-42.

Fischer, S. (1983). A framework for monetary and banking analysis. *Economic Journal*.93, 1-16.

Fisher, A. (1935). *The Clash of Progress and Security*. London: Macmillan.

Focus Economics. (2016). *Nigeria- Exchange Rate*. Retrieved from <https://www.focus-economics.com/country-indicator/nigeria/exchange-rate>

Fohlin, C. (2000). *Economic, Political and Legal Factors in Financial System Development: International Pattern in Historical Perspective*. Pasadena: California Institute of Technology.

Foley-Fisher, N., Ramcharan, R., and Yu, E. (2016). The Impact of Unconventional Monetary Policy on Firm Financing Constraints: Evidence from the Maturity Extension Program. *Journal of Financial Economics*, 122(2), 409-429.

Friedman, M. (2014). Monetary Policy Structures. *Cato Journal*, 34(3), 631-656.

FSDH Research. (2018). *Economic and Financial Markets Outlook (2018-2022)*. Retrieved from <https://fsdhgroup.com/wp-content/uploads/2018/03/Economic-Financial-Outlook-2018.pdf>

Fu, X., Lin, Y., and Molyneux, P. (2018). The Quality and Quantity of Bank Intermediation and Economic Growth: Evidence from Asia Pacific. *Applied Economics*, <https://doi.org/10.1080/00036846.2018.1450486> , 1-20.

Fufa, T., and Kim, J. (2017). Stock Markets, Banks and Economic Growth: Evidence from More Homogenous Panels. *Research in International Business and Finance*, 1-14.

Fuller, W. (1976). *Introduction to Statistical Time Series*. New York: Wiley.

Gabor, D. (2018). Goodbye (Chinese) Shadow Banking, Hello Market-Based Finance. *Development and Change*, 49(2), 394-419.

Galariotis, E., Makrichoriti, P., and Spyrou, S. (2018). The Impact of Conventional and Unconventional Monetary Policy on Expectations and Sentiment. *Journal of Banking and Finance*, 86, 1-20.

Gale, D., and Hellwig, M. (1985). Incentive-compatible debt contracts: The one-period Problem. *Review of Economic Studies*, 52, 647-663.

Gambacorta, L., and Marques-Ibanez, D. (2011). The Bank lending Channel: Lessons from the Crisis. *Economic Policy*, 26(66), 135-182.

Gambacorta, L., and Mistrulli, P. (2004). Does Bank Capital Affect Lending behaviour. *Journal of Financial Intermediation*, 13, 436-457.

Ganbold, B. (2008). Improving Access to Finance fro SME: International Good Experiences and Lessons for Mongolia. *Tokyo: Institute of Developing Economies*, 438(438), 1-64.

Garcia-Appendini, E., and Montoriol-Garriga, J. (2013). Firms as Liquidity Providers: Evidence from the 2007-2008 Financial Crisis. *Journal of Financial Economics*, 109, 272-291.

Gbosi, A. (1993). *Monetary Economics and the Nigerian Financial System*. Port Harcourt: Pam Unique Publishing Co. Ltd.

GECF. (2016, June 12). *Nigeria (Member)*. Retrieved from <https://www.gecf.org/countries/nigeria>

Gertler, M., and Gilchrist, S. (1994). Monetary Policy, Business Cycles and the Behaviour of Small Manufacturing Firms. *The Quarterly Journal of Economics*, 109(2), 309-340.

Gertler, M., and Rose, A. (1996). Finance, Public Policy and Growth. In *Financial Reform Theory and Experience* (pp. 17-20). Cambridge, UK: Cambridge University Press.

Ghartey, E. (2018). Financial Development and Economic Growth: Some Caribbean Empirical Evidence. *Journal of Economic Development*, 43(1), 49-76.

Glanzberg, M. (2013). *Truth*. Retrieved from <https://plato.stanford.edu/entries/truth/>

Glewwe, P., Maiga, E., and Zheng, H. (2014). The contribution of education to economic growth: A review of the evidence, with Special attention and an application to Sub-saharan Africa. *World Development*, 59, 379-393.

Godfrey, L.G. (1978). Testing against general autoregressive and moving average error models with the regressors include lagged dependent variables. *Econometrica*, 46 (6), 1293-1301.

Golden, S., and Walker, H. (2012). The Ten Commandments of Commercial Credit: The 'Cs' of Good and Bad Loans. *The RMA Journal, Philadelphia*, 13, 42-46.

Goldsmith, R. (1969). *Financial Structure and Development*. New Haven: Yale University Press.

Golodniuk, I. (2006). Evidence on the Bank Lending Channel in Ukraine. *Research in International Business and Finance*, 20, 180-199.

Gomes, F., and Issler, J. (2017). Testing consumption optimality using aggregate data. *Macroeconomic Dynamics*, 21(5), 1119-1140.

Granger, C. (1986). Development in the study of cointegrated economic variables. *Oxford Bulletin of Economics and Statistics*. 48, pp 2 13-228.

Grassa, R., and Gazdar, K. (2014). Law and Islamic Finance: How Legal Origins Affect Islamic Finance Development? . *Borsa Istanbul Review* , 14-3, 158-166.

Grbic, M. (2016). Interaction between Financial Intermediation Efficiency and Economic Growth. *Economic Horizons*, 18(3), 241-254.

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

Gregory, A., and Hansen, B. (1996). Residual-based Test for Cointegration in Models with Regime Shifts. *Journal of Econometrics*, 70, 99-126.

- Grigoli, F., Koczan, Z., and Tapalova, P. (2018). *Drivers of Labour Force Participation in Advanced Economies: Macro and Micro Evidence*. Working Paper.
- Grossman, S., and Weiss, L. (1983). A Transactions Based Model of the Monetary Transmission Mechanism. *The American Economic Review*, 73(5), 871-880.
- Guariglia, A. (1999). The Effects of Financial Constraints on Inventory Investment: Evidence from a Panel of UK Firms. *Economica*, 66, 43-62.
- Gujarati, D.N. and Porter, D.C (2010). *Basic Econometrics*. 5Rev ed., New York, McGraw-Hill.
- Gunji, H., and Yuan, Y. (2010). Bank Profitability and the Bank Lending Channel: Evidence from China. *Journal of Asian Economics*, 21, 129-141.
- Gupta, J., and Gregoriou, A. (2018). Impact of Market-based Finance on SMEs Failure. *Economic Modelling*, 69, 13-25.
- Gurley, J., and Shaw, E. (1967). Financial Structure and Economic Development. *Economic Development and Cultural Change*, 15, 257-268.
- Gustavsson, M., and Osterholm, P. (2012). Labor-force participation rates and the informational value of unemployment rates: evidence from disaggregated US data. *Economics Letters*, 116, 408-410.
- Haini, H. (2019). Internet penetration, human capital and economic growth in the ASEAN economies: evidence from a translog production function. *Applied Economics Letters*, 26(21), 1774-1778.
- Hair, J., Wolfinbarger, M., Money, A., Samouel, P., and Page, M. (2015). *Essentials of Business Research Methods* (2nd ed.). Florence: Taylor and Francis.
- Hall, J. (2013). Pragmatism, Evidence and Mixed Methods Evaluation. In D. Mertens, and S. Hesse-Biber (Eds.), *Mixed Methods and Credibility of Evidence in Evaluation. New Directions for Evaluation* (pp. 15-26).
- Halvorsen, J., and Jacobsen, D. (2016). The Bank-lending Channel Empirically Revisited. *Journal of Financial Stability*, 27, 95-105.
- Hamdi, H., Hakimi, A., and Sbia, R. (2017). Finance and Growth Nexus: What Role for Institutions in Developed and Developing Countries. *Journal of Economic Development*, 42(4), 1-22.
- Hamid, F. and Yunus, N. (2020). Bank Lending Channel of Monetary Policy Transmission: Evidence from ASEAN. *Global Business Review*. 21 (4), 892-905.
- Hammersley, M. (1992). *What's Wrong with Ethnography?* London: Routledge.
- Han, J., and Lee, J. (2020). Demographic change, human capital and economic growth in Korea. *Japan and The World Economy*, 53, 100984.



- Hancock, D., and Wilcox, J. (1998). The “credit crunch” and the Availability of credit to Small Businesses. *Journal of Banking and Finance*, 22(1), 983-1014.
- Hantke-Domas, M. (2003). The Public Interest Theory of Regulation: Non-existence or Misinterpretation? *European Journal of Law and Economics*, 15(2), 165-194.
- Hao, C. (2006). Development of Financial Intermediation and Economic Growth: The Chinese Experience. *China Economic Review*, 17, 347-362.
- Harre, R. (1987). Enlarging the paradigm. *New Ideas in Psychology*, 5(1), 3-12.
- Harrod, R. (1939). An Essay in Dynamic Theory. *The Economic Journal* 49 (193): 14–33.
- Harvey, A. (1990). *The Econometric Analysis of Time Series*, 2nd ed., Cambridge, Mass., The MIT Press.
- Hassan, M., Sanchez, B., and Yu, J. (2011). Financial Development and Economic Growth: New Evidence from Panel Data. *The Quarterly Review of Economics and Finance*, 51, 88-104.
- Hassler, U., and Wolters, J. (2006). Autoregressive Distributed Lag Models and Cointegration. *Allgemeines Statistisches Archiv*, 90, 59-74.
- Hasyyati, Z., and Sahara, S. (2020). The composition of human capital and economic growth: evidence from Aceh and West Papua Provinces, Indonesia. *International Journal of Economics and Financial Issues*, 10(2), 132-142.
- Hellwig, M. (1991). Banking, financial intermediation and corporate finance, in: A. Giovannini and C. Mayer (eds.), *European Financial Integration*, Cambridge: Cambridge University Press.
- Hendry, D., and Juselius, K. (2000). Explaining Cointegration Analysis: Part 1. *The Energy Journal*, 21(1), 1-42.
- Hermes, N. (1994). Financial Development and Economic Growth: A Survey of the Literature. *International Journal of Development Banking*, 12(1), 3-22.
- Hesse, H. (2007). *Financial Intermediation in the Pre-Consolidated Banking Sector in Nigeria*. World Bank .
- Hesse, M. (1978). Habermas' Consensus Theory of Truth. *Philosophy of Science Association*, 2(1), 373-396.
- Himmelberg, C. P., and Morgan, D. P. (1995). Is Bank Lending Special? (pp. 15-44). Federal Reserve Bank of Boston.
- Hobbs, C. (2013). Pragmatic Theory of Truth. *New Catholic Encyclopedia Supplement*, 3(1), 1248-1249.
- Holmstrom, B., and Tirole, J. (1997). Financial Intermediation, Loanable Funds and the Real Sector. *Quarterly Journal of Economics*, 112(3), 663-691.

Hookway, C. (2013). *Pragmatism*. Retrieved from <https://plato.stanford.edu/entries/pragmatism/>

Hosono, K. (2006). The Transmission Mechanism of Monetary Policy in Japan: Evidence from Banks' Balance Sheets. *J. Japanese Int. Economics*, 20, 380-405. Retrieved from [http://econ.ucsd.edu/~vramey/research/Credit\\_Channel2.pdf](http://econ.ucsd.edu/~vramey/research/Credit_Channel2.pdf)

Hunt, M. (2001). Four Theories of Truth: Learning from the Philosophies of Men. 120-123.

Huntington-Klein, N. (2017). Estimating local average treatment effects in aggregate data. *Applied Economics Data*, 24(11), 762-765.

Huybens, E., and Smith, B. (1999). Inflation, Financial Markets and Long-run Real Activity. *Journal of Monetary Economics*, 43(2), 283-315.

Ibarra, R. (2016). How important is the credit channel in the transmission of monetary policy in Mexico? *Applied Economics*, 48(36), 3462-3484.

Idowu, F. (2012). Impact of Microfinance on Small and Medium-sized Enetrprises in Nigeria. *7th International Conference on Innovation and Management*, (pp. 1864-1871).

Igan, D., Kabundi, A., Simone, F., and Tamirisa, N. (2017). Monetary Policy and Balance Sheets. *Journal of Policy Modelling*, 39, 169-184.

Ighoroje, J., and Egedi, H. (2015). An Evaluation of the Roles of Financial Institutions in the Development of Nigerian Economy. *Global Journal of Interdisciplinary Social Sciences*, 4(4), 1-5.

Iheanacho, E. (2016). The Impact of Financial Development on Economic Growth in Nigeria: An ARDL Analysis. *Economies*, 4(26), 1-12.

IMF. (2017). *List of Members*. Retrieved from <https://www.imf.org/external/np/sec/memdir/memdate.htm>

Imoisi, A. I., Amba, E. A., and Okon, I. M. (2017). Unemployment Rate and Economic Growth in Nigeria: An Empirical Analysis, 1980-2016. *International Journal of Development and Sustainability*, 6(7), 369-384.

Investopedia. (2018). *Five Cs of Credit*. Retrieved from <https://www.investopedia.com/terms/f/five-c-credit.asp>

Ishioro, B. (2013). Monetary Transmission Mechanism in Nigeria: A Causality Test. *Mediterranean Journal of Social Sciences*, 4(13), 377-388.

ITA (2020). Nigeria- country commercial guide. Information and communications technology. [Nigeria - Information and Communications Technology \(trade.gov\)](https://trade.gov/nigeria)

Jalilian, H., and Odedokun, M. (2000). Equipment and Non-Equipment Private Invetsment: A Generalized Solow Model. *Applied Economics*, 82(3), 289-296.



James, W. (1907). *Pragmatism: A New Name for Some Old Ways of Thinking*. New York: Longman Green and Co.

Jarque, C.M. and Bera, A.K. (1987). A Test for Normality of Observations and Regression Residuals. *International Statistical Review*, 55 (2), 163-172.

Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models . *Econometrica*, 59(6), 1551-1580.

Jose, M. (1997). *The Balance-sheet Transmission Channel of Monetary policy: The Cases of Germany and Spain*. Banco de Espana.

Jung, W. (1986). Financial Development and Economic Growth: International Evidence. *Economic Development and Cultural Change*, 34, 336-346.

Kajurova, V., and Rozmahel, P. (2016). Stock Market Development and Economic Growth: Evidence from the European Union. *Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis*, 64(6), 1927-1936.

Kakes, J., and Sturm, J. (2002). Monetary policy and bank lending: Evidence from German banking groups . *Journal of Banking and Finance*, 26, 2077-2092.

Kar, M., Nazlioglu, S., and Agir, H. (2011). Financial Development and Economic Growth Nexus in the MENA Countries: Bootstrap Panel Granger Causality Analysis. *Economic Modelling*, 28, 685-693.

Karaki, M. (2020). Monetary shocks and job flows: evidence from disaggregated data. *Empirical Economics*, 58, 2911-2936.

Karim, Z., Azman-Saini, W., and Karim, B. (2011). The Bank Lending Channel of Monetary Policy: Dynamic Panel Evidence from Malaysia. *Journal of Asia-Pacific Business*, 12(3), 225-243.

Karima, S. (2011). Stock Markets, Banks and Economic Growth . *Journal of International Real Estate and Construction Studies*, 1(2), 189.

Kashyap, A., and Stein, J. (1994). Monetary Policy and Bank Lending. In N. Gregory (Ed.), *Monetary Policy* (pp. 221-256). Chicago: University of Chicago Press (NBER Studies in Business Cycles, Volume 29).

Kashyap, A., and Stein, J. (2000). What do a Million Observations on Banks say about the Transmission of Monetary Policy. *The American Economic Review* , 90(3), 407-428.

Kashyap, A., Lamont, O., and Stein, J. (1994). Credit Conditions and the Cyclical Behavior of Inventories. *Quarterly Journal of Economics*, 109(3), 565-592.

Kashyap, A., Stein, J., and Wilcox, D. (1993). Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance. *The American Economic Review*, 83(1), 78-98.

Kashyap, A., Stein, J., and Wilcox, D. (1996). Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance: Reply. *The American Economic Review*, 86(1), 310-314.

Kazeem, Y. (2016). *Finally, Nigeria has really let go and the Naira is floating*. Retrieved from <https://qz.com/africa/743074/finally-nigeria-has-really-let-go-and-the-naira-is-floating/>

Kazeem, Y. (2017). *Nigeria has now been in recession for five quarters-but there may be light at the end of the tunnel*. Retrieved from <https://qz.com/989805/nigerias-economy-has-been-in-recession-for-the-fifth-consecutive-quarter/>

Kazeem, Y. (2017). *Nigeria's Unemployment Problem is Showing no signs of Slowing Down*. Retrieved from <https://qz.com/africa/999641/the-unemployment-rate-in-nigeria-has-climbed-for-nine-consecutive-quarters/>

Khan, U. (2020). The Nexus between Urbanisation, Gross Capital Formation and Economic Growth: A Study of Saudi Arabia. *Journal of Asian Finance, Economics and Business*, 7(12), 677-682.

Khosravi, T. (2015). *The Bank Lending Channel: An Empirical Analysis of EU Accession Countries from 2004 to 2013*. St. Louis: Federal Reserve Bank of St. Louis.

Khundrakpam, J. (2013). Credit Channel of Monetary Policy Transmission in India: How Effective and Long is the Lag. *The IUP Journal of Applied Economics*, XII(1), 26-49.

Kim, D. and Sohn, W. (2017). The Effect of Bank Capital on Lending: Does Liquidity Matter. *Journal of Banking and Finance*, 77 (4), 95-107. doi: 10.1016/j.jbankfin.2017.01.011

King, R., and Levine, E. (1993). Finance and Growth: Schumpeter might be Right. *Quarterly Journal of Economics*, 108, 717-738.

Kirkham, R. (1992). *Theories of Truth: A Critical Introduction*. Cambridge: MIT Press.

Klein, M. (1971). A Theory of the Banking Firm. *Journal of Money, Credit and Banking*, 3(2), 205-218.

Koch, C., Nilsson, O., and Collin, S. (2015). The Influence of Investor Protection on the Performance of Financial Analysts: Time Series Analyses in Four Different Legal Systems. *International Journal of Disclosure and Governance*, 12(2), 167-184.

Koginam, O., and Ekiye, E. (2020). Determinants of Imports and the Nigerian Economy. *Confluence Journal of Economics and Allied Sciences*, 3(2), 187-206.

Koopmans, T. (1965). On the Concept of Optimal Economic Growth. In J. Johansen (Ed.), *The Econometric Approach to Development Planning*. Amsterdam: North-Holland Publishing Co.

- Korkmaz, S. (2015). Impact of Bank Credits on Economic Growth and Inflation. *Journal of Applied Finance and Banking*, 5(1), 51-63.
- Kroszner, R., and Strahan, P. (2000). *Obstacles to Optimal Policy: The Interplay of Politics and Economics in Shaping Bank Supervision and Regulation Reforms*. Chicago: University of Chicago Graduate School of Business.
- Kumar, S. (2014). Financial Development as an Instrument of Economic Growth in India: Evidence from Cointegration and Causality Analysis. *IUP Journal of Applied Economics*, 13(4), 28-41.
- Kurov, A., and Stan, R. (2018). Monetary Policy Uncertainty and the Market Reaction to Macroeconomic News. *Journal of Banking and Finance*, 86, 127-142.
- Kurz, H. (2010). Technical progress, capital accumulation and income distribution in Classical Economics: Adam Smith, David Ricardo and Karl Marx . *The European Journal of the History of Economic Thought*, 17(5), 1183-1222.
- Kurz, H., and Salvadori, N. (2014). *Theories of Economic Growth- Old and New*. Retrieved from [https://www.researchgate.net/publication/252313772\\_Theories\\_of\\_Economic\\_Growth\\_-\\_Old\\_and\\_New](https://www.researchgate.net/publication/252313772_Theories_of_Economic_Growth_-_Old_and_New)
- Kuukkanen, J. (2007). Kuhn, The Correspondence Theory of Truth and Coherentist Epistemology. *Studies in History and Philosophy of Science*, 38(1), 555-566.
- Kvamsdal, S. (2019). Indexing of Technical Change in Aggregated Data. *Computational Economics*, 53(3), 901-920.
- Kyophilavong, P., Uddin, G., and Shahbaz, M. (2016). The Nexus Between Financial Development and Economic Growth in Lao PDR. *Global Business Review*, 17(2), 303-317.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1998). Law and Finance. *Journal of Political Economy*, 106(6), 1113-1155.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1999). The Quality of Government. *Journal of Law, Economics and Organization*, 15(1), 222-279.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (2000). Investor Protection and Corporate Governance . *Journal of Financial Economics*, 58, 3-27.
- Lanne, M., and Nyberg, H. (2014). Generalized Forecast Error Variance Decomposition for Linear and Nonlinear Multivariate Models. *CREATES Research Paper*, 1-10.
- Lavrov, E., and Kapoguzov, E. (2006). *Economic Growth: Theories and Problems*. Omsk: OmsU.

- Lazarov, D., Miteva-Kacarski, K., and Nikoloski, K. (2016). An Empirical Analysis of Stock Market Development and Economic Growth: The Case of Macedonia. *South East European Journal of Economics and Business*, 11(2), 71-81.
- LBS. (2017). *Industry Report 2016*. Retrieved from [https://www.lbs.edu.ng/programmes/mba/mbas\\_industry\\_report](https://www.lbs.edu.ng/programmes/mba/mbas_industry_report)
- Lee, B. (2012). Bank-based and Market-based Financial Systems: Time-series Evidence. *Pacific-Basin Finance Journal*, 20(2), 173-197.
- Leland, H., and Pyle, D. (1977). Information Asymmetries, Financial Structure and Financial Intermediation. *The Journal of Finance*, 32(2), 371-387.
- Lerskullawat, A. (2017). Effects of Banking Sector and Capital Market Development on the Bank Lending Channel of Monetary Policy: ASEAN Country Case Study. *Kasetsart Journal of Social Sciences*, 38, 9-17.
- Levine, R. (1997). Financial Development and Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688-726.
- Levine, R. (2002). *Bank-Based or Market-Based Financial Systems: Which is Better?* Cambridge, MA: National Bureau of Economic Research.
- Levine, R., and Zervos, S. (1998). Stock Markets, Banks and Economic Growth. *American Economic Review*, 26, 1169-1183.
- Levine, R., Loayza, N., and Beck, T. (2000). Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics*, 46(1), 31-77.
- Lewis, D. (2001). Forget about the Correspondence Theory of Truth. *Analysis*, 61(4), 275-280.
- Leybourne, S., Newbold, P., Vougas, D., and Kim, T. (2002). A Direct Test for Cointegration Between a Pair of Time Series. *Journal of Time Series Analysis*, 23(2), 173-191.
- Liang, H., and Reichert, A. (2012). The Impact of Banks and Non-Bank Financial Institutions on Economic Growth. *The Service Industries Journal*, 32(5), 699-717.
- Lipsey, R., and Brechling, F. (1966). Trade Credit and Monetary Policy: A Rejoinder. *The Economic Journal*, 76(301), 165-167.
- Liu, Z., Pang, X., and Huang, L. (2012). The Balance Sheet Channel of Monetary Policy Transmission: Evidence from Chinese Listed Companies. *2012 Third Global Congress on Intelligent Systems* (pp. 360-363). Conference Publishing Services.
- Lown, C., and Morgan, D. (2002). Credit Effects in the Monetary Mechanism. *Economic Policy Review*, 217-235.
- Lu, C., and Shen, C. (2012). Bank Lending and Economic Growth of Chinese Cities. *China and World Economy*, 20(2), 59-79.

- Lucas, R. (1988). On the Mechanisms of Economic Development. *Journal of Monetary Economics*, 22(1), 3-42.
- Luper, I. (2012). Banking Sector Reforms and SMEs Financing in Nigeria. *Global Journal of Management Science and Technology*, 1(3), 5-12.
- Lutz, C. (2015). The Impact of Conventional and Unconventional Policy Shocks. *Journal of Banking and Finance*, 61, 89-105.
- Lynch, M. (2001). Coherence Theories: Introduction . In *The Nature of Truth, Classic and Contemporary Perspectives* (pp. 99-102). Cambridge: The MIT Press.
- Lys, T., Naughton, J., and Wang, C. (2015). Signaling through Corporate Accountability Accounting. *Journal of Accounting and Economics*, 60(1), 56-72.
- Macro Trends. (2019). *Crude Oil Prices- 70 Year Historical Chart*. Retrieved from <https://www.macrotrends.net/1369/crude-oil-price-history-chart>
- Madichie, C., Maduka, A., Oguanobi, C., and Ekesiobi, C. (2014). Financial Development and Economic Growth in Nigeria: A Reconsideration of Empirical Evidence. *Journal of Economics and Sustainable Development*, 5(28), 199-208.
- Mahadeva, L., and Robinson, P. (2004). *Unit Root Testing to Help Model Building* . Bank of England Handbooks in Central Banking, No. 22.
- Mahathanaseth, I. and Tauer, L. (2019). Monetary Policy Transmission through the Bank Lending Channel in Thailand. *Journal of Asian Economics*, 60, 14-32.
- Mahran, H. (2012). Financial Intermediation and Economic Growth in Saudi-Arabia: An Empirical Analysis, 1968-2010. *Modern Economy*, 3(1), 626-640.
- Malthus, T. (1925). *Prawo ludności, tłum.* Warszawa: K. Stein, Gebethner i Wolff.
- Mamman, A., and Hashim, Y. (2014). Impact of Bank Lending on Economic Growth in Nigeria. *Research Journal of Finance and Accounting*, 5(18), 174-182.
- MAN. (2017). *History and Background*. Retrieved from <https://www.manufacturersnigeria.org/History.aspx>
- Maneejuk, P., and Yamaka, W. (2021). The Impact of Higher Education on Economic Growth in ASEAN-5 Countries. *Sustainability*, 13(520), 1-28.
- Manish, G., and O'Reilly, C. (2018). Banking Regulation, Regulatory Capture and Inequality. *Public Choice*, 1-20.
- Mankiw, N. (1985). Small Menu Costs and Large Business Cycles: A Macroeconomic Model of Monopoly. *Quarterly Journal of Economics*, 100(2), 529-537.
- Marashdeh, H., and Al-Malkawi, H. (2014). Financial Deepening and Economic Growth in Saudi Arabia. *Journal of Emerging Market Finance*, 13(2), 139-154.

- Marques, L., Fuinhas, J., and Marques, A. (2013). Does the Stock Market Cause Economic Growth? Portuguese Evidence of Economic Regime Change. *Economic Modelling*, 32, 316-324.
- Martin, W. (2016). *Africa's Most Important Currency has lost 40% in a Single Day*. Retrieved from <http://uk.businessinsider.com/nigerian-naira-crashes-after-government-removes-peg-2016-6>
- Marx, K. (1872). *Le Capital*. Paris: Maurice Lachatre.
- Mason, J. (2018). *Qualitative Researching* (3rd ed.). London: SAGE.
- Matadeen, J., and Seetanah, B. (2015). Stock Market Development and Economic Growth: Evidence from Mauritius. *The Journal of Developing Areas*, 49(6), 25-36.
- Mateut, S. (2005). Trade Credit and Monetary Policy Transmission. *Journal of Economic Surveys*, 19(4), 655-670.
- Matousek, R., and Sarantis, N. (2009). The Bank Lending Channel and Monetary Transmission in Central and Eastern European Countries. *Journal of Comparative Economics*, 37, 321-334.
- Matousek, R., and Solomon, H. (2018). Bank Lending Channel and Monetary Policy in Nigeria. *Research in International Business and Finance*, 1-8.
- McCaig, B., and Stengos, T. (2005). Financial Intermediation and Growth: Some Robustness Results. *Economic Letters*, 88, 306-312.
- McDermott, J. (1999). Mercantilism and Modern Growth. *Journal of Economic Growth*, 4(1), 55-80.
- McGuinness, G., Hogan, T., and Powell, R. (2018). European Trade Credit use and SME Survival. *Journal of Corporate Finance*, 49, 81-103.
- McKinnon, R. (1973). *Money and Capital in Economic Development*. Washington, DC: The Brookings Institution.
- Meltzer, A. (1995). Monetary, Credit and (Other) Transmission Processes: A Monetarist Perspective. *The Journal of Economic Perspectives*, 9(4), 49-72.
- Merton, R. (1995). Financial Innovation and the Management and Regulation of Financial Institutions. *Journal of Banking and Finance*, 19, 461-481.
- Merton, R., and Bodie, Z. (1995). A Conceptual Framework for Analysing the Financial Environment. In C. e. Dwight (Ed.), *The Global Financial System: A Functional Perspective* (pp. 3-32). Boston, MA: Harvard Business School.
- Ministry of Budget and National Planning. (2017). *Economic Recovery and Growth Plan, 2017 to 2020*. Retrieved from file:///G:/ARU%20PhD/Economic-Recovery-Growth-Plan-2017-2020.pdf



Mishkin, F. (1996). The Channels of Monetary Transmission: Lessons for Monetary Policy. *Banque de France-Universite Conference*. National Bureau of Economic Research.

Mishkin, F., and Eakins, S. (2017). *Financial Markets and Institutions* (9th ed.). Harlow: Pearson.

Mishra, A. and Burns, K. (2017). The Effect of Liquidity Shocks on the Bank Lending Channel: Evidence from India. *International Review of Economics and Finance*. 52, 55-76.

Mitchell, C. (2016, September 26). *Oil price fall is the Main Reason for Tough Times in Nigeria*. Retrieved from <https://www.ft.com/content/3a47381a-7371-11e6-bf48-b372cdb1043a>

Modebe, N., and Ezeaku, H. (2016). Relationship between Financial Development and Economic Growth in Nigeria. *International Journal of Economics and Financial Issues*, 6(4), 1842-1850.

Modigliani, F., and Miller, M. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review*, 48(3), 261-297.

Modigliani, F. (1963). The Monetary Mechanism and Its Interaction with Real Phenomena. *The Review of Economics and Statistics*, 45(1), 79-107.

Moradi, Z., Mirzaeenejad, M., and Geraeenejad, G. (2016). Effect of Bank-Based or Market-Based Financial Systems on Income Distribution in Selected Countries. *Procedia Economics and Finance*, 36, 510-521.

Mulder, P., De Groot, H., and Hofkes, M. (2001). Economic Growth and Technological Change: A Comparison of Insights from a Neo-classical and Evolutionary Perspective. *Technological Forecasting and Social Change*, 68(2), 151-171.

Naiborhu, E. (2020). The Lending Channel of Monetary Policy in Indonesia. *Journal of Asian Economics*, 67, 1-14

Narayan, P.K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied Economics*. 37 (17), 1979-1990.

Narayan, P.K. (2004). Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji. *Department of Economics Discussion Papers No. 02/04, Monash University, Melbourne, Australia*.

Nasir, H., Majeed, S., and Aleem, A. (2018). Does Financial Development Leads Economic Growth? Evidence from Emerging Asian Markets. *Asian Economic and Financial Review*, 8(5), 599-617.

National Bureau of Statistics. (2018). *Nigeria Gross Domestic Report Q2 2018*. Retrieved from [http://nigerianstat.gov.ng/elibrary?queries\[search\]=GDP](http://nigerianstat.gov.ng/elibrary?queries[search]=GDP)

- Ndako, U. (2010). Financial Development and Economic Growth: Evidence from Nigeria. *The IUP Journal of Financial Economics*, 8(4), 37-58.
- Ndlovu, G. (2013). Financial Sector Development and Economic Growth: Evidence from Zimbabwe. *International Journal of Economics and Financial Issues*, 3(2), 435-446.
- Ndugbu, M., Ojiegbe, J., Uzowuru, L., and Okeke, P. (2015). Bank and Non-Bank financial institutions and the development of the Nigerian economy. *International journal for innovation education and research*, 3(8), 23-36.
- Nelson, C., and Plosser, C. (1982). Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications. *Journal of Monetary Economics*, 90, 139-162.
- Ng, S. and Perron, P. (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica* 69 (6), 1519-1554.
- Ngare, E., Nyamongo, E., and Misati, R. (2014). Stock Market Development and Economic Growth in Africa. *Journal of Economics and Business*, 74, 24-39.
- Ngepah, N., Saba, C., and Mabindisa, N. (2020). Human capital and economic growth in South Africa: A cross-municipality panel data analysis. *South African Journal of Economic and Management Sciences*, 24(1).
- Ngouhouo, I., and Moutie, G. (2015). Financial Intermediation and Economic Growth in Cameroon. *International Journal of Financial Research*, 6(3), 143-149.
- Ngouhouo, I., and Moutie, G. (2015). Financial Intermediation and Economic Growth in Cameroon. *International Journal of Financial Research*, 6(3), 143-149.
- Nigeria Galleria. (2018). *Nigeria: 36 States of Nigeria*. Retrieved from [https://www.nigeriagalleria.com/Nigeria/States\\_Nigeria/](https://www.nigeriagalleria.com/Nigeria/States_Nigeria/)
- Nilsen, J. (2002). Trade Credit and Bank Lending Channel. *Journal of Money, Credit and Banking*, 34(1), 226-253.
- Nkoro, E., and Uko, A. (2016). Autoregressive Distributed Lag (ARDL) Cointegration Technique: Application and Interpretation . *Journal of Statistical and Econometric Methods*, 5(4), 63-91.
- NNPC. (2018). *History of the Nigerian Petroleum Industry*. Retrieved from <http://www.nnpcgroup.com/NNPCBusiness/Businessinformation/OilGasInNigeria/IndustryHistory.aspx>
- NOTN. (2018). *Trade for Modernization, Growth and Job Creation*. Retrieved from <http://www.notn.gov.ng/bundles/notn/docs/NATPOR.pdf>
- Nteegah, A., and Mansi, N. (2017). Analysis of factors influencing import demand in Nigeria. *West African Journal of Industrial and Academic Research*, 17(1), 88-100.



- Nwankwo, F. (2017). *Economic Ression in Nigeria: Challenges and Solution*. Retrieved from <https://www.vanguardngr.com/2017/07/economic-recession-nigeria-challenges-solution/>
- Nwosa, P., and Saibu, M. (2012). The Monetary Transmission Mechanism in Nigeria: A Sectoral Output Analysis. *International Journal of Economics and Finance*, 4(1), 204-212.
- Nwosa, P., and Saibu, O. (2011). Monetary Transmission Mechanism in Nigeria. *Contemporary Legal and Economic Issues*, 3, 353-367.
- Nyasha, S., and Odhiambo, N. (2014). Bank-based Financial Development and Economic Growth: A Review of International Literature. *Journal of Financial Economic Policy*, 6(2), 112-132.
- Nyasha, S., and Odhiambo, N. (2016). Financial Systems and Economic Growth: Empirical Evidence from Australia. *Contemporary Economics*, 10(2), 163-174.
- Nyasha, S., and Odhiambo, N. (2017a). Bank Versus Stock Market Development in Brazil: An ARDL Bounds Testing Technique. *South Eastern European Journal of Economics and Business*, 12(1), 7-21.
- Nyasha, S., and Odhiambo, N. (2017b). Are Banks and Stock Markets Complements or Sstitutes? Empirical Evidence from Three Countries. *Managing Global Transitions*, 15(1), 81-101.
- Nyasha, S., and Odhiambo, N. (2018). Financial Development and Economic Growth Nexus: A Revisionist Approach. *Banca Monte dei Paschi di Siena*, 47(1), 223-229.
- Obamuyi, T. (2010). Firms' Performance and Lending Constraints in Nigeria. *The Journal of Entrepreneurship*, 19(2), 179-190.
- Obamuyi, T., Edun, A., and Kayode, O. (2012). Bank Lending, Economic Growth and the Performance of the Manufacturing Sector in Nigeria. *European Scientific Journal*, 8(3), 20-36.
- Obasanho, S. (2018). *Sectors of the Nigerian Economy*. Retrieved from <https://www.naija.ng/1099875-sectors-nigerian-economy.html#1099875>
- Odedokun, M. (1991). Differential Impacts of Export Expansion on Economic Growth in the LDCs: A Comparison of Evidences across Regional Income Groups and Between the Decades of 1970s and 1980s. *Eastern Africa Economic Review*, 7(2), 69-93.
- Odedokun, M. (1996). Alternative Econometric Approaches for Analysing the Role of the Financial Sector in Economic Growth: Time-series Evidence from LDCs. *Journal of Development Economics*, 50(1), 119-146.
- Odedokun, M. (1998). Financial Intermediation and Economic Growth in Developing Countries. *Journal of Economic Studies*, 25, 137-159.

Odeleye, A. (2014). Pre-Consolidation and Post-Consolidation of Nigerian Banking Sector: A Dynamic Comparison. *International Journal of Economics and Financial Issues*, 4(1), 27-34.

Odhiambo, N. (2014). Financial Systems and Economic Growth in South Africa: A Dynamic Complementarity Test. *International Review of Applied Economics*, 28(1), 83-101.

Odhiambo, N. (2020). Energy consumption and economic growth in Botswana: empirical evidence from a disaggregated data. *International Review of Applied Economics*, 35(1), 3-24.

Odili, E. (2017). *Recession: Nigerians Continue to Groan Over Prices of Goods*. Retrieved from <https://www.naija.ng/1010647-naij-weekly-price-check-commodities-on-the-rise-as-christmas-approaches-photos.html#1010647>

OECD. (2004). *Small and Medium-sized Enterprises in Turkey: Issues and Policies*. Paris: OECD Publications.

OECD. (2008). *The Contribution of Services to Development and the Role of Trade Liberalisation and Regulation*. Retrieved from <http://www.oecd.org/investment/globalforum/40302909.pdf>

Ogbo, A., and Nwachukwu, A. (2012). The Role of Entrepreneurship in Economic Development: The Nigerian Perspective. *European Journal of Business and Management*, 4(8), 95-105.

Ogbonna, I., Uwajumogu, N., Godwin, C., and Agu, V. (2013). Financial Development-Growth Nexus in Nigeria: Empirical Investigation based on Vector Autoregressive (VAR) Approach. *Journal of Economics and Finance*, 1(5), 58-71.

Ogbonna, I., Uwajumogu, N., Godwin, C., and Agu, V. (2013). Financial Development-Growth Nexus in Nigeria: Empirical Investigation Based on Vector Autoregressive Approach (VAR). *Journal of Economics and Finance*, 1(5), 58-71.

Ogbulu, O., and Torbira, L. (2012). Monetary Policy and the Transmission Mechanism: Evidence from Nigeria. *International Journal of Economics and Finance*, 4(11), 122-133.

O'Gorman, K., and MacIntosh, R. (2014). *Research Methods for Business and Management: A Guide to Writing Your Dissertation*. London: Goodfellow Publishers Limited.

O'Gorman, K., Lochrie, S., and Watson, A. (2014). Research Philosophy and Case Studies. In K. O'Gorman, and R. Macintosh (Eds.), *Research Methods and for Business and Management: A Guide to Writing Your Dissertation* (pp. 57-78). London: Goodfellow Publishers Limited.

Ogunjiuba, K., and Obiechina, M. (2011). Financial Sector Reforms in Nigeria: Issues and Challenges. *International Journal of Business and Management*, 6(6), 222-233.

- Ogunjobi, J., Eseyin, O., and Popoola, O. (2021). Human capital and energy infrastructure: implications for economic growth in Nigeria. *International Journal of Energy Economics and Policy*, 11(3), 149-154.
- Ogunleye, O., Owolabi, O., Sanyaolu, O., and Lawal, O. (2017). Human Capital Development and Economic Growth in Nigeria. *IJRDO- Journal of Business Management*, 3(8), 17-37.
- Ojide, M., and Ojide, K. (2014). Growth Evidence of Imports in Nigeria: A Time Series Analysis. *International Researcher*, 3(2), 46-54.
- Ojo, E. (2014). *Nigeria to Intensify Promotion of Domestic Trade*. Retrieved from <https://www.africanexaminer.com/nigeria-to-intensify-promotion-of-domestic-trade/>
- Okotie, S. (2018). The Nigerian Economy Before the Discovery of Crude Oil. In *The Political Ecology of Oil and Gas Activities in the Nigerian Aquatic Ecosystem*. 71-81. Academic Press.
- Oladipo, O.A, Iyoha, F., Fakile, S.A, Asaleye, A.J. and Eluyela, F.D (2019). Do Government taxes have implications on manufacturing sector output? Evidence from Nigeria. *Journal of Management, Information and Decision Sciences*. 22 (3), 181-190.
- Oliner, S., and Rudebusch, G. (1996). Is there a broad credit channel for Monetary Policy? *Economic Review*, 3-13.
- Oliner, S., and Rudebusch, G. (1996). Monetary Policy and Credit Conditions: Evidence from the Composition of External Finance: Comment. *The American Economic Review*, 86(1), 300-309.
- Olofinji, L. (2017). *A Brief Review of the Real Estate Industry in Nigeria*. Retrieved from <http://www.cedmagazineng.com/a-brief-review-of-the-real-estate-industry-in-nigeria/>
- Olowookere, D. (2018). *Nigeria's Total Imports in 2017 Drop 8.5% as Exports Rise 59.47%*. Retrieved from <https://www.businesspost.ng/2018/03/04/nigerias-total-imports-2017-drop-8-5-exports-rise-59-47/>
- Olsen, W. (2012). *Research and Data Collection*. London: Sage Publications.
- Oluitan, R. (2012). Bank Credit and Economic Growth: Evidence from Nigeria. *International Business and Management*, 5(2), 102-110.
- Omitogun, O., Osoba, A., and Tella, S. (2016). An Interactive Effect of Human Capital Variables on Economic Growth in Nigeria. *Acta Universitatis Danubius*, 12(5), 108-119.
- Omotayo, J. (2017). *The Nigeria 1914 Amalgamation*. Retrieved from <https://the234project.com/history/nigeria/the-nigeria-1914-amalgamation/>
- Omura, M. (2016). An Analysis of Wine and Food Consumption Dynamics in Japan using a Vector Error-Correction Model. *Applied Economics*, 48(44), 4257-4269.

Ono, S. (2015). Bank Lending Channel in Monetary Policy Transmission: Evidence from Russia. *International Journal of Economics and Finance*, 7(4), 1-11.

Onokala, P. and Olajide, C. (2020). Problems and challenges facing Nigerian transport system which affect their contribution to the economic development of the country in the 21<sup>st</sup> century. *Transportation Research Procedia*. 48. 2945-2962.

Onwachukwu, C. I. (2015). Does Unemployment Significantly Impact on Economic Growth in Nigeria? *Global Journal of Human-Social Science: E Economics*, 15(8), 1-5.

Onwuegbuchunam, D., and Akujuobi, A. (2013). SMEs Financing and Development in Nigeria's Shipping Sector: A Case Study. *Advances in Management and Applied Economics*, 3(6), 143-157.

OPEC. (2018). *Brief History*. Retrieved from [https://www.opec.org/opec\\_web/en/about\\_us/24.htm](https://www.opec.org/opec_web/en/about_us/24.htm)

Oriavwote, V., and Eshenake, S. (2014). An Empirical Assessment of Financial Sector Development and Economic Growth in Nigeria. *International Review of Management and Business Research*, 3(1), 139-149.

Orji, A., Imelda, O., and Mba, P. (2015). Financial Liberalization and Output Growth in Nigeria. *International Journal of Economic and Financial Issues*, 5(1), 297-311.

Osipian, A. (2007). *Economic Growth: Education as a Factor of Production*. Kramatorsk: KEHI Press.

Osoba, A., and Tella, S. (2017). Human Capital Variables and Economic Growth in Nigeria: An Interactive Effect. *EuroEconomica*, 36(1), 131-143.

Osoro, J., and Osano, E. (2014). *Bank-Based versus Market-Based Financial System: Does Evidence Justify the Dichotomy in the Context of Kenya?* Kenya Bankers Association Centre for Research on Financial Markets and Policy.

Osuji, O. (2015). Financial Development and Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, 6(20), 26-40.

Oxford Business Group. (2018). *Construction and Real Estate: The Report, Nigeria 2017*. Retrieved from <https://oxfordbusinessgroup.com/nigeria-2017/construction-real-estate-0>

Oyebowale, A.Y. (2020). Determinants of Bank Lending in Nigeria. *Global Journal of Emerging Market Economies*.

Oyebowale, A. Y., and Algarhi, A. (2020). Macroeconomic determinants of economic growth in Africa. *International Review of Applied Economics*, 34(6), 839-857.

Oyebowale, A., and Karley, N. (2018). Investigating Finance-Growth Nexus: Further Evidence from Nigeria. *International Journal of Economics and Finance*, 10(9), 121-135.

- Oyedoku, G., and Adeyemi, A. (2018). Human Capital Formation and Economic Growth in Nigeria. *Finance and Banking Studies*, 7(3), 44-65.
- Oyejide, T., and Bankole, A. (2001). Liberalisation of the Services Sector in Nigeria: Implications of Unilateral and Multilateral Approaches. *African Economic Research Consortium on Services Sector Liberalization in Nigeria*, (pp. 1-47).
- Oyinlola, M., and Adededeji, A. (2019). Human capital, financial sector development and inclusive growth in sub-saharan Africa. *Economic Change and Restructuring*, 52, 43-66.
- Ozbal, E. (2021). Dynamic effects of higher education expenditures on human capital and economic growth: an evaluation of OECD countries. *Policy reviews in higher education*, 1-23.
- Ozekhome, H. (2018). Is Human Capital Accumulation a Growth Driver in Nigeria? An Empirical Investigation. *Oradea Journal of Business and Economics*, 3(2), 66-77.
- Ozlu, P., and Yalcin, C. (2012). The Trade Credit Channel of Monetary Policy Transmission: Evidence from Non-financial Manufacturing Firms in Turkey. *Emerging Markets Finance and Trade*, 48(4), 102-117.
- Pan, L., and Mishra, V. (2018). Stock Market Development and Economic Growth: Empirical evidence from China . *Economic Modelling*, 68, 661-673.
- Patrick, H. (1966). Financial Development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change*, 34(1), 174-189.
- Patterson, D. (2003). *What is Correspondence Theory of Truth?* Netherlands: KluwerAcademic Publishers.
- Patterson, Z., and Patterson, S. (2012). Social Protection and Economic Growth. *The American Economist*, 57(2), 188-195.
- Peek, J., and Rosengren, E. (1995). Bank Regulation and the Credit Crunch. *Journal of Banking and Finance*, 19(1), 679-692.
- Peek, J., and Rosengren, E. (2000). Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States. *American Economic Review*, 90(1), 30-45.
- Perron, P. (1989). The Great Cash, the Oil Price Shock and the Unit Root Hypothesis. *Econometrica*, 57, 1361-1401.
- Pesaran, M.H, and Pesaran B. (1997). *Working with Microfit 4.0: Interactive Econometric Analysis*, Oxford University Press, Oxford.
- Pesaran, M., and Shin, Y. (1999). n Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. In S. Strom (Ed.), *Chapter 11 in Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium* (pp. 371-413). Cambridge: Cambridge University Press.

- Pesaran, M., Shin, Y., and Smith, R. (1999). Pooled Mean Group Estimation of Dynamic Heterogeneous Panels. *Journal of the American Statistical Association*, 94(446), 621-634.
- Pesaran, M., Shin, Y., and Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16, 289-326.
- Petrella, G., and Resti, A. (2013). Supervisors as Information Producers: Do Stress Tests Reduce Bank Opacity? *Journal of Banking and Finance*, 37, 5406-5420.
- Phillips, P., and Ouliaris, S. (1990). Asymptotic Properties of Residual-based tests for Cointegration. *Econometrica*, 58(1), 165-193.
- Phillips, P., and Perron, P. (1988). Testing for a Unit Root in Times Series Regression. *Biometrika*, 75(2), 335-346.
- Pietak, L. (2014). Review of Theories and Models of Economic Growth. *Comparative Economic Research*, 17(1), 45-60.
- Pokrovskii, V. (2014). Endogenous Technical Progress in the Theory of Economic Growth. *ISRN Economics*, 1-5.
- Pradhan, R. (2018). Development of Stock Market and Economic Growth; the G-20 Evidence. *Eurasian Econ Rev*, 1-21.
- Prochniak, M., and Wasiak, K. (2017). The Impact of the Financial System on Economic Growth in the Context of the Global Crisis: Empirical Evidence for the EU and OECD Countries. *Empirica*, 44, 295-337.
- Puatwoe, J., and Piabuo, S. (2017). Financial Sector Development and Economic Growth: Evidence from Cameroon. *Financial Innovation*, 3(25), 1-18.
- Pyle, D.H. (1971). On the theory of financial intermediation. *Journal of Finance*, 26, 737-747.
- Quijano, M. (2014). Information Asymmetry in US Banks and the 2009 Bank Stress Test. *Economics Letters*, 123, 203-205.
- Quine, W. (2009). Two Dogmas of Empiricism. In *Analytic Philosophy, An Anthology* (pp. 135-143). Malden: Blackwell.
- Rajan, R., and Zingales, L. (2000). *The Great Reversals: The Politics of Financial Development in the 20th Century*. Paris: OECD.
- Ram, R. (1987). Exports and Economic Growth in Developing Countries: Evidence from Time-Series and Cross-section Data. *Economic Development and Cultural Change*, 36(1), 51-72.
- Ramsey, F. P. (1928). A Mathematical Theory of Saving. *The Economic Journal*, 38(152), 543-559.



- Ramsey, J. B. (1969). Tests for Specification Errors in Classical Linear Least-Squares Regression Analysis. *Journal of the Royal Statistical Society. Series B (Methodological)*, 31(2), 350-371.
- Rani, R., and Kumar, N. (2019). On the Causal Dynamics Between Economic Growth, Trade Openness and Gross Capital Formation: Evidence from BRICS Countries. *Global Business Review*, 20(3), 795-812.
- Rappoport, P., and Reichlin, L. (1989). Segmented Trends and Nonstationary Time Series. *Economic Journal*, 99, 168-177.
- Rateiwa, R., and Aziakpono, M. (2017). Non-bank financial institutions and economic growth: evidence from Africa's three largest economies. *South African Journal of Economic and Management Sciences*, 20(1), 1-11.
- Ratner, J. (1935). The Correspondence Theory of Truth. *The Journal of Philosophy*, 32(6), 141-152.
- Reddy, S. and Bhardwaj, D (2019). Bank Characteristics, Financial Innovation and Bank Lending Channel – Evidence from India. *Prajnan*, 47 (4), 323-339.
- Reed, M. (2011). Critical Realism: Philosophy, Method or Philosophy in Search of a Methods? In D. Buchanan, and A. Bryman (Eds.), *The SAGE Handbook of Organisational Research Methods* (pp. 430-448). London: SAGE Publications Ltd.
- Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. London: John Murray.
- Rieppel, O. (2005). The Philosophy of Total Evidence and Its Relevance for Phylogenetic Inference. *Papeis Avulsos de Zoologia*, 45(8), 77-89.
- Ritchie, J., Lewis, J., Nicholls, C., and Ormston, R. (2014). *A Guide for Social Science Students and Researchers* (2nd ed.). London: SAGE.
- Robinson, J. (1952). *The Generalization of the General Theory, the Rate of Interest and other Essays*. London: Macmillan.
- Robson, C. (2011). *Real World Research* (3rd ed.). Chichester: John Wiley and Sons Ltd.
- Robson, C., and McCartan, K. (2016). *Real World Research* (4th ed.). London: John Wiley and Sons Ltd.
- Rogoff, K. (2016, March 2). *What's Behind the Drop in oil Prices*. Retrieved from <https://www.weforum.org/agenda/2016/03/what-s-behind-the-drop-in-oil-prices/>
- Romer, C., and Romer, D. (1989). *Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz*. Cambridge, MIT Press: NBER Macroeconomic Annual.
- Romer, D., and Romer, C. (1989). New Evidence on Monetary Transmission Mechanism. *Brookings Papers on Economic Activity*, 41(1), 149-198.

- Romer, P. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94(5), 1002-1037.
- Romer, P. (1990). Endogenous Technological Change. *Journal of Political Economy*, 98(5), 71-102.
- Rotemberg, J. (1984). A Monetary Equilibrium Model with Transaction Costs. *The Journal of Political Economy*, 92(1), 40-58.
- Sahara Reporters. (2018). *Breaking: 'It's Now June 12'- Buhari Cancels May 29 as Democracy Day*. Retrieved from [http://saharareporters.com/2018/06/06/breaking-it's-now-june-12-buhari-cancels-may-29-democracy-day](http://saharareporters.com/2018/06/06/breaking-it-s-now-june-12-buhari-cancels-may-29-democracy-day)
- Sahoo, S. (2014). Financial Intermediation and Growth: Bank-Based versus Market-Based Systems. *The Journal of Applied Economic Research*, 8(2), 93-114.
- Said, S.E. and Dickey, D (1984). Testing for Unit Roots in Autoregressive Moving-Average Models with Unknown Order. *Biometrika*, 71 (3), 599-607.
- Saiz, M., Azofra, S., Olmo, B., and Gutierrez, C. (2017). Trade credit, sovereign risk and monetary policy in Europe. *International Review of Economics and Finance*, 52, 39-54.
- Salachas, E., Laopodis, N., and Kouretas, G. (2017). The Bank-lending Channel and Monetary Policy During Pre and Post 2007 Crisis. *Journal of International Financial Markets, Institutions and Money*, 47, 176-187.
- Sanfilippo-Azofra, S., Torre-Olmo, B., Cantero-Saiz, M. and Lopez-Gutierrez, C. (2018). Financial Development and the Bank Lending Channel in Developing Countries. *Journal of Macroeconomics*, 55, 215-234.
- Sanni, M. (2018). Drivers of eco-innovation in the manufacturing sector of Nigeria. *Technological Forecasting and Social Change*. 131, 303-314.
- Santander. (2018). *Foreign Trade in Figures*. Retrieved from <https://en.portal.santandertrade.com/analyse-markets/nigeria/foreign-trade-figures>
- Santander. (2018). *Nigerian Economic Outline*. Retrieved from <https://en.portal.santandertrade.com/analyse-markets/nigeria/economic-outline>
- Sanusi, C. (2012). *Banking Reform and its Impact on the Nigerian Economy*. University of Warwick's Economic Summit.
- Sanusi, L. (2010). *Global financial meltdown and the reforms in the Nigerian banking sector*. Retrieved from <https://www.bis.org/review/r110124c.pdf>
- Sardadvar, S. (2011). *Economic Growth in the Regions of Europe: Theory and Empirical Evidence from a Spatial Growth Model*. London: Springer-Verlag Berlin Heidelberg.
- Saunders, M., Lewis, P., and Thornhill, A. (2016). *Research Methods for Business Students* (7th ed.). Harlow: Pearson.



- Savin, N.E and White, K.J. (1977). The Durbin-Watson test for Serial Correlation with extreme sample sizes or many regressors. *Econometrica*, 45 (8), 1989-1996.
- Schertler, A., Buch, C., and Westernhagen, N. (2006). Heterogeneity in Lending and Sectoral Growth: Evidence from German Bank-Level Data. *IEEP*, 3(1), 43-72.
- Scholtens, B., and Wensveen, D. (2000). A Critique on the Theory of Financial Intermediation. *Journal of Banking and Finance*, 24, 1243-1251.
- Scholtens, B., and Wensveen, D. (2003). The Theory of Financial Intermediation: An Essay on What it Does (Not) Explain. *SUERF- The European Money and Finance Forum*, 7-57.
- Schumpeter, J. (1911). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schwert, W. (1989). Test for Unit Roots: A Monte Carlo Investigation. *Journal of Business and Economic Statistics*. 7, 147-159.
- Seth, A., John, M. A., and Dalhatu, A. Y. (2018). The Impact of Unemployment on Economic Growth in Nigeria: An Application of Autoregressive Distributed Lag (ARDL) Bound Testing. *Sumerianz Journal of Business Management and Marketing*, 1(2), 37-46.
- Seven, U., and Yetkiner, H. (2016). Financial Intermediation and Economic Growth: Does Income Matter? *Economic Systems*, 40, 39-58.
- Shahbaz, M., Hye, Q., Tiwari, A., and Leitao, N. (2013). Economic growth, energy consumption, financial development, international trade and CO2 emissions in Indonesia. *Renewable and Sustainable Energy Reviews*, 25, 109-121.
- Sharipov, I. (2015). Contemporary Economic Growth Models and Theories: A Literature Review. *CES Working Papers, Centre for European Studies, Alexandru Ioan Cuza University*, 7(3), 759-773.
- Shaw, E. (1973). *Financial Deepening in Economic Development*. New York: Oxford University Press.
- Shokr, M. and Al-Gasaymeh, A. (2018). Bank lending channel and banking sector efficiency: panel data of Egypt. *International Journal of Emerging Markets*, 13 (5), 1291-1310.
- Shokr, M., Karim, Z., and Zaidi, M. (2017). The Balance Sheet Channel of Monetary Policy: The Panel Evidence of Egypt. *Macroeconomics and Finance in Emerging Market Economies*, 10(3), 286-305.
- Sianesi, B., and Van Reenen, J. (2003). The Returns to Education: Macroeconomics. *Journal of Economic Surveys*, 17(2), 157-200.
- Siddiqui, A., and Rehman, A. (2017). The Human Capital and Economic Growth Nexus: in East and South Asia. *Applied Economics*, 49(28), 2697-2710.

- Sihombing, J., and Pangaribuan, H. (2017). A Study of Corporate Governance, Disclosure and Information Asymmetry in Indonesia Banking Industry. *Jurnal Akuntansi*, XXI(02), 156-169.
- Silver, N. (2012). *The Signal and the Noise: The Art and Science of Prediction*. London: Allen Lane.
- Silverman, D. (2017). *Doing Qualitative Research* (5th ed.). London: SAGE.
- Simpasa, A., Nandwa, B., and Nabassaga, T. (2014). Bank Lending Channel of Monetary Policy Transmission in Zambia: Evidence from Bank-level Data . *African Development Bank Group, Working Paper Series* 211.
- Sims, C.A (1980). Macroeconomics and Reality. *Econometrica*, 48 (1), 1-48.
- Singh, A., and Weisse, B. (1998). Emerging Stock Markets, Portfolio Capital Flows and Long-term Economic Growth: Micro and Macroeconomic Perspectives. *World Development*, 26(4), 607-622.
- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan and T. Cadell.
- Smith, J. (1983). Quantitative versus Qualitative Research: An Attempt to Clarify the Issue, 12(3), 6-13.
- Solarin, S. A., and Bello, M. O. (2011). Multivariate Causality Test on Electricity Consumption, Capital, Labour and Economic Growth for Nigeria. *Journal of Business and Economics*, 3(1), 1-29.
- Solow, R. (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, 70(1), 65-94.
- Soludo, C. (2009). *The Developments in the Banking Sector*. Central Bank of Nigeria.
- Somoye, R. (2008). The Performances of Commercial Banks in Post-Consolidation Period in Nigeria: An Empirical Review. *European Journal of Economics, Finance and Administrative Sciences*, 14(1), 62-73.
- Song, F., and Thakor, A. (2010). Financial System Architecture and the Co-evolution of Banks and Capital Markets. *The Economic Journal*, 120(547), 1021-1055.
- Sousa, J., and Gameiro, I. (2013). The Balance Sheet Channel in a Small Open Economy in a Monetary Union. *International Journal of Finance and Economics*, 18, 278-292.
- Sow, M. (2016). *Africa in the News: Nigeria Abandons Currency Peg, Mozambique's Currency Plunges, and the EU signs Trade Agreement with SADC*. Retrieved from <https://www.brookings.edu/blog/africa-in-focus/2016/06/17/africa-in-the-news-nigeria-abandons-currency-peg-mozambiques-currency-plunges-and-the-eu-signs-trade-agreement-with-sadc/>

- Stern, N. (1991). The Determinants of Growth. *The Economic Journal*, 101(404), 122-133.
- Stiglitz, J., and Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 71(3), 393-410.
- Stiglitz, J., and Weiss, A. (1983). Incentive Effects of Terminations: Applications to the Credit and Labour Markets. *American Economic Review*, 73, 212-927.
- Stock, J. and Watson, M. (2019). *Introductory to Econometrics* (4<sup>th</sup> ed.). Boston, Addison-Wesley Pearson
- Strischek, D. (2009). The Five Cs of Credit. *The RMA Journal, Philadelphia*, 91(8), 34-37.
- Subrahmanyam, A., and Titman, S. (1999). The Going-public Decision and the Development of Financial Markets. *Journal of Finance*, 54(3), 1045-1082.
- Sulaiman, C., Bala, U., Tijani, B., Waziri, S., and Maji, I. (2015). Human Capital, Technology and Economic Growth: Evidence from Nigeria. *SAGE Open*, 5(4), 1-10.
- Swan, T. (1956). Economic Growth and Capital Accumulation. *Economic Record*, 32(2), 334-361.
- Taylor, J. (1995). The Monetary Transmission Mechanism: An Empirical Framework. *Journal of Economic Perspectives*, 9(4), 11-26.
- Tchana, F. (2012). The Welfare Cost of Banking Regulation. *Economic Modelling*, 29, 217-232.
- Tchana, F. (2014). The Empirics of Banking Regulation. *Emerging Markets Review*, 19, 49-76.
- Templars. (2017). *The Nigerian Economic Recovery and Growth Plan: A Renewed Hope for Revival?* Retrieved from <https://www.templars-law.com/wp-content/uploads/2017/04/Nigerian-Economic-Recovery-Growth-Plan-A-Renewed-Hope-for-Revival-.pdf>
- Terungwa, A. (2012). Financing Options Available to Small and Medium Scale Enterprises (SMEs) in Nigeria: A Critique. *The Business and Management Review*, 3(1), 278-285.
- Terungwa, A. (2012). Risk Management and Insurance of Small and Medium Scale Enterprises (SMEs) in Nigeria. *International Journal of Finance and Accounting*, 1(1), 8-17.
- The World Bank. (2015). *The World Bank*. Retrieved from <http://www.worldbank.org/en/country/nigeria/overview>
- The World Bank. (2018). *Nigeria - Structural Adjustment Program: Policies, Implementation, and Impact*. Retrieved from

<http://documents.worldbank.org/curated/en/959091468775569769/Nigeria-Structural-adjustment-program-policies-implementation-and-impact>

This Day. (2018). *The Growing Poverty in the Land*. Retrieved from <https://www.pressreader.com/nigeria/thisday/20180110/281590945961190>

Tijani, M. (2017). *Official: 2016 Recession is Nigeria's Worst Decline Since 1987*. Retrieved from <https://www.thecable.ng/just-2016-recession-officially-nigerias-worst-decline-since-1987>

Tobin, J. (1963). Commercial banks as creators of "money", in: W.L. Smith, R.L. Teigen (eds.), *Readings in Money, National Income, and Stabilization Policy*, Homewood, Ill.: Richard D. Irwin.

Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory. *Journal of Money, Credit and Banking*, 1(1), 15-29.

Tobin, J., and Brainard, W. (1963). Financial Intermediaries and the Effectiveness of Monetary Controls. *The American Economic Review*, 53(2), 383-400.

Trading Economics. (2016). *Nigeria Industrial Production*. Retrieved from <http://www.tradingeconomics.com/nigeria/industrial-production>

Trading Economics. (2017). *Nigeria GDP Annual Growth Rate*. Retrieved from <https://tradingeconomics.com/nigeria/gdp-growth-annual>

Trading Economics. (2018). *Nigeria- Credit Rating*. Retrieved from <https://tradingeconomics.com/nigeria/rating>

Trading Economics. (2018). *Nigeria GDP Annual Growth Rate*. Retrieved from <https://tradingeconomics.com/nigeria/gdp-growth-annual>

Trading Economics. (2018). *Nigeria Industrial Production*. Retrieved from <https://tradingeconomics.com/nigeria/industrial-production>

Trading Economics. (2018). *Nigeria Inflation Rate*. Retrieved from <https://tradingeconomics.com/nigeria/inflation-cpi>

Trading Economics. (2018). *Nigeria Interest Rate*. Retrieved from <https://tradingeconomics.com/nigeria/interest-rate>

Trading Economics. (2018). *Nigeria Unemployment Rate*. Retrieved from <https://tradingeconomics.com/nigeria/unemployment-rate>

Trading Economics. (2018). *Nigeria Unemployment Rate*. Retrieved from <https://tradingeconomics.com/nigeria/unemployment-rate>

Trading Economics. (2018). *United Kingdom Interest Rate*. Retrieved from <https://tradingeconomics.com/united-kingdom/interest-rate>

Trading Economics. (2019). *Nigeria Youth Unemployment Rate*. Retrieved from <https://tradingeconomics.com/nigeria/youth-unemployment-rate>

Trend Economy. (2019). *Nigeria- Imports and Exports*. Retrieved from <https://trendeconomy.com/data/h2/Nigeria/TOTAL>

Triki, T., Kouki, I., Dhaou, M., and Calice, P. (2017). Bank Regulation and Efficiency: What Works for Africa? *Research in International Business and Finance*, 39, 183-205.

Tripathy, J. (2013). Secondary Data Analysis: Ethical Issues and Challenges. *Iranian Journal of Public Health*, 42(12), 1478-1479.

Uddin, G., Sjo, B., and Shahbaz, M. (2013). The Causal Nexus between Financial Development and Economic Growth in Kenya. *Economic Modelling*, 35, 701-707.

Uddin, M., Ali, M., and Masih, M. (2020). Institutions, human capital and economic growth in developing countries. *Studies in Economics and Finance*, 1086-7376.

Udo, B. (2018). *Nigeria's Central Bank takes over Skye Bank*. Retrieved from <https://www.premiumtimesng.com/news/headlines/284921-breaking-nigerias-central-bank-takes-over-skye-bank.html>

Ujunwa, A., and Salami, O. (2010). Stock Market Development and Economic Growth: Evidence from Nigeria. *European Journal of Economics, Finance and Administrative Sciences*, 25, 44-53.

Ume, K.E, Obasikene, A.C., Oleka, C.D, Nwadike, A.O. and Okoyeuzu, C. (2017). The relative impact of bank credit on manufacturing sector in Nigeria. *International Journal of Economics and Financial Issues*. 7 (2), 196

UNESCO. (2017). *What do we mean by 'youth'*. Retrieved from <http://www.unesco.org/new/en/social-and-human-sciences/themes/youth/youth-definition/>

Uremadu, S., Nwokocha, A., and Duru-Uremadu, C. (2017). Effect of Financial Intermediation and Regulations on Financial Deepening and Growth: Evidence from Nigeria. *i-manager's Journal on Management*, 11(4), 30-52.

Vaithilingam, S., Guru, B., and Shanmugam, B. (2003). Bank Lending and Economic Growth in Malaysia. *Journal of Asia-Pacific Business*, 5(1), 51-69.

Vandekerckhove, J., Matzke, D., and Wagenmakers, E. (2015). *Model Comparison and the Principle of Parsimony*. Retrieved from <http://www.ejwagenmakers.com/inpress/VandekerckhoveEtAlinpress.pdf>

Vanguard. (2018). *Why CBN Revoked Skye Bank Licence*. Retrieved from <https://www.vanguardngr.com/2018/09/why-cbn-revoked-skye-bank-license/>

Verspagen, B. (1992). Endogenous Innovation in Neo-Classical Growth Models: A Survey. *Journal of Macroeconomics*, 14(4), 631-662.

Wells Fargo. (2018). *Know What Lenders Look For*. Retrieved from <https://www.wellsfargo.com/financial-education/credit-management/five-c/>

Werner, R. (2005). *New Paradigm in Macroeconomics*. Basingstoke: Palgrave Macmillan.

Werner, R. (2014). Can Banks Individually Create Money out of Nothing? — The theories and the Empirical Evidence. *International Review of Financial Analysis*, 36, 1-19.

Werner, R. (2016). A Lost Century in Economics: Three Theories of Banking and the Conclusive Evidence. *International Review of Financial Analysis*, 46, 361-379.

White, H. L. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48 (4), 817–838.

White, W. (1964). Trade Credit and Monetary Policy: A Reconciliation. *The Economic Journal*, 74(296), 935-945.

Williams, M. (2016). *Key Concepts in the Philosophy of Social Research*. London: SAGE.

Wilson, J. (2014). *Essentials of Business Research* (2nd ed.). London: SAGE.

Wolenski, A. (2002). From Intentionality to Semantics. *Erkenntnis*, 56(1), 9-27.

Wolters, J., and Hassler, U. (2006). Unit Root Testing. *Allgemeines Statistisches Archiv*, 90, 43-58.

World Bank. (2017). *Nigeria: Overview*. Retrieved from <http://www.worldbank.org/en/country/nigeria/overview>

World Daily. (2018). *Nigeria set to Overtake India with the Most People Living in Poverty*. Retrieved from <https://www.worlddaily.co.uk/nigeria-set-to-overtake-india-with-most-people-living-in-poverty/>

XE. (2019). *XE Currency Charts: USD to NGN*. Retrieved from <https://www.xe.com/currencycharts/?from=USDandto=NGNandview=5Y>

Xu, H. (2016). Financial Intermediation and Economic Growth in China: New Evidence from Panel Data. *Emerging Markets, Finance and Trade*, 52(3), 724-732.

Xu, Z. (2000). Financial Development, Investment and Economic Growth. *Economic Enquiry*, 38(2), 331-344.

Yaman, F. (2019). Structural Estimation of Labour Adjustment Costs with Temporally Disaggregated Data. *Economic Inquiry*, 57(4), 1939-1962.

Yasmeen, H., Tan, Q., Zameer, H., Vinh Vo, X., and Shahbaz, M. (2021). Discovering the relationship between natural resources, energy consumption, gross capital formation, with economic growth: can lower financial openness change the curse into blessing. *Resources Policy*, 71, 1-9.

Yosha, O. (1995). Information Disclosure Costs and the Choice of Financing Source. *Journal of Financial Intermediation*, 4(1), 3-20.



- Young, J. (2001). A Defence of the Coherence Theory of Truth. *The Journal of Philosophical Research*, 26(1), 89-101.
- Young, J. (2013). *The Coherence Theory of Truth*. Retrieved from <https://plato.stanford.edu/entries/truth-coherence/>
- Zeileis, A. and Hothorn, T. (2002). Diagnostic Checking in Regression Relationships. <https://cran.r-project.org/web/packages/lmtest/vignettes/lmtest-intro.pdf>
- Zhang, J., Wang, L., and Wang, S. (2012). Financial Development and Economic Growth: Recent Evidence from China. *Journal of Comparative Economics*, 40, 393-412.
- Zhao, T., and Murinde, V. (2009). *Bank Competition, Risk Taking and Productive Efficiency: Evidence from Nigeria's Banking Reform Experiments*. Stirling: University of Stirling.
- Zhu, S., and Li, R. (2017). Economic complexity, human capital and economic growth: empirical research based on cross-country panel data. *Applied Economics*, 49(38), 3815-3828.
- Zivot, E., and Andrews, D. (1992). Further Evidence on the Great Cash, the Oil Price Shock and the Unit Root Hypothesis. *Journal of Business and Economic Statistics*, 10, 251-270.
- Zoltan, J., and Kumhof, M. (2015). *Banks are not Intermediaries of Loanable Funds - and why this matters*. London: Bank of England.
- Zulhibri, M. (2013). Bank Characteristics, Lending Channel and Monetary Policy in Emerging Markets: Bank-level Evidence from Malaysia. *Applied Financial Economics*, 23, 347-362.

# APPENDICES



### Appendix A: Disaggregated Data Presentation

Year	Y	gY	L	gL	K	gK	H	gH
1960	8.82E+12		48.567258		3.0210E+12		1.410042	
1961	8.84E+12	0.19%	48.529953	-0.08%	3.0180E+12	-0.10%	1.415558	0.39%
1962	9.2E+12	4.10%	47.730373	-1.65%	2.9420E+12	-2.52%	1.533775	8.35%
1963	9.99E+12	8.58%	45.990002	-3.65%	2.7770E+12	-5.61%	1.791087	16.78%
1964	1.05E+13	4.95%	44.899524	-2.37%	2.6740E+12	-3.71%	1.952313	9.00%
1965	1.1E+13	4.88%	43.770207	-2.52%	2.5670E+12	-4.00%	2.119282	8.55%
1966	1.05E+13	-4.25%	44.800849	2.35%	2.6650E+12	3.82%	1.966902	-7.19%
1967	8.87E+12	-15.74%	48.456022	8.16%	3.0110E+12	12.98%	1.426488	-27.48%
1968	8.76E+12	-1.25%	48.700222	0.50%	3.0340E+12	0.76%	1.390384	-2.53%
1969	1.09E+13	24.20%	44.025901	-9.60%	2.5910E+12	-14.60%	2.081477	49.71%
1970	1.36E+13	25.01%	38.026218	-13.63%	2.0230E+12	-21.92%	2.968525	42.62%
1971	1.55E+13	14.24%	33.756173	-11.23%	1.6180E+12	-20.02%	3.599847	21.27%
1972	1.61E+13	3.36%	32.603526	-3.41%	1.5090E+12	-6.74%	3.770265	4.73%
1973	1.69E+13	5.39%	30.693726	-5.86%	2.3380E+12	54.94%	3.641557	-3.41%
1974	1.88E+13	11.16%	32.217549	4.96%	8.3550E+12	257.36%	2.253782	-38.11%
1975	1.78E+13	-5.23%	32.503942	0.89%	4.6090E+12	-44.84%	0.74092	-67.13%

### Appendix A (Continued)

Year	Y	gY	L	gL	K	gK	H	gH
1976	1.94E+13	9.04%	32.03447	-1.44%	3.6110E+12	-21.65%	0.81938	10.59%
1977	2.06E+13	6.02%	32.258407	0.70%	2.5960E+12	-28.11%	1.04217	27.19%
1978	1.94E+13	-5.76%	32.039411	-0.68%	3.7390E+12	44.03%	1.16873	12.14%
1979	2.07E+13	6.76%	32.289048	0.78%	2.5490E+12	-31.83%	1.61068	37.81%
1980	2.16E+13	4.20%	32.503071	0.66%	2.5320E+12	-0.67%	1.84057	14.27%
1981	1.88E+13	-13.13%	32.229246	-0.84%	8.6580E+12	241.94%	2.32503	26.32%
1982	1.86E+13	-1.05%	32.28682	0.18%	6.2990E+12	-27.25%	2.67904	15.23%
1983	1.76E+13	-5.05%	32.560001	0.85%	4.1720E+12	-33.77%	2.86951	7.11%
1984	1.73E+13	-2.02%	31.145323	-4.34%	2.3670E+12	-43.26%	3.01485	5.06%
1985	1.87E+13	8.32%	32.245016	3.53%	2.5830E+12	9.13%	3.41281	13.20%
1986	1.71E+13	-8.75%	30.35	-5.88%	2.6020E+12	0.74%	3.57167	4.65%
1987	1.52E+13	-10.75%	34.399917	13.34%	1.6790E+12	-35.47%	3.50467	-1.88%
1988	1.64E+13	7.54%	31.864289	-7.37%	1.4390E+12	-14.29%	3.87956	10.70%
1989	1.75E+13	6.47%	31.832188	-0.10%	1.9490E+12	35.44%	4.14935	6.95%
1990	1.97E+13	12.77%	32.029847	0.62%	2.7350E+12	40.33%	0.865029	-79.15%
1991	1.96E+13	-0.62%	32	-0.09%	2.7180E+12	-0.62%	0.841897	-2.67%

### Appendix A (Continued)

Year	Y	gY	L	gL	K	gK	H	gH
1992	1.96E+13	0.43%	32.020823	0.07%	2.6520E+12	-2.43%	0.858035	1.92%
1993	2.01E+13	2.09%	32.121614	0.31%	3.0700E+12	15.76%	0.936152	9.10%
1994	2.02E+13	0.91%	32.166397	0.14%	2.7370E+12	-10.85%	0.97086	3.71%
1995	2.02E+13	-0.31%	32.151124	-0.05%	2.0190E+12	-26.23%	0.959023	-1.22%
1996	2.12E+13	4.99%	32.398412	0.77%	2.3810E+12	17.93%	1.728153	80.20%
1997	2.18E+13	2.80%	32.54411	0.45%	2.5910E+12	8.82%	2.668489	54.41%
1998	2.24E+13	2.72%	32.68926	0.45%	2.4620E+12	-4.98%	5.596738	109.73%
1999	2.25E+13	0.47%	32.715297	0.08%	2.3920E+12	-2.84%	6.12199	9.38%
2000	2.37E+13	5.32%	33.008651	0.90%	2.7970E+12	16.93%	6.857097	12.01%
2001	2.47E+13	4.41%	33.264913	0.78%	2.1830E+12	-21.95%	7.499253	9.36%
2002	2.56E+13	3.78%	33.494482	0.69%	2.6270E+12	20.34%	8.074519	7.67%
2003	2.83E+13	10.35%	34.146315	1.95%	3.9420E+12	50.06%	9.70792	20.23%
2004	3.79E+13	33.74%	36.490002	6.86%	2.9960E+12	-24.00%	9.92416	2.23%
2005	3.92E+13	3.44%	35.843559	-1.77%	2.6840E+12	-10.41%	10.48404	5.64%
2006	4.24E+13	8.21%	34.249569	-4.45%	4.2760E+12	59.31%	10.30324	-1.72%
2007	4.53E+13	6.83%	32.815133	-4.19%	6.0590E+12	41.70%	10.14054	-1.58%

**Appendix A (Continued)**

Year	Y	gY	L	gL	K	gK	H	gH
2008	4.81E+13	6.27%	31.408	-4.29%	6.0150E+12	-0.73%	9.980932	-1.57%
2009	5.14E+13	6.93%	29.754247	-5.27%	8.1050E+12	34.75%	9.793354	-1.88%
2010	5.55E+13	7.84%	27.754937	-6.72%	9.5910E+12	18.33%	9.56658	-2.32%
2011	5.82E+13	4.89%	26.41083	-4.84%	8.8320E+12	-7.91%	10.16896	6.30%
2012	6.07E+13	4.28%	25.176444	-4.67%	9.1290E+12	3.36%	10.72217	5.44%
2013	6.39E+13	5.39%	23.553801	-6.45%	9.8420E+12	7.81%	11.44938	6.78%
2014	6.8E+13	6.31%	21.55345	-8.49%	1.1120E+13	12.99%	12.34586	7.83%
2015	6.98E+13	2.65%	20.659412	-4.15%	1.0950E+13	-1.53%	12.74654	3.25%
2016	6.87E+13	-1.62%	21.218801	2.71%	1.0420E+13	-4.84%	12.49584	-1.97%
2017	6.92E+13	0.81%	20.941549	-1.31%	1.0680E+13	2.50%	12.62009	0.99%

### Appendix A (Continued)

Variable	Explanation
gY (Real GDP annual % growth)	Annual growth rate of GDP based on constant local currency or real GDP. Real GDP is the aggregate of gross value contributed by an economy's all resident producers with addition of any product taxes and minus any subsidies not included in the value of the products. Real GDP is calculated without deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.
L (Labour force participation rate for ages 15-24, national estimate)	Labour force participation rate for ages 15-24 is the proportion of the population ages 15-24 that is economically active: all people who supply labour for the production of goods and services during a specified period.
gK (Gross Capital Formation annual % growth)	Annual growth rate of gross capital formation based on constant local currency. Gross capital formation (formerly gross domestic investment) comprises of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.
gH (School enrolment, tertiary, % gross)	Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.

\*\*\*\*NOTES: Data collected from World Bank Database. gY and gK already in growth form as collected from the source. L and H computed to growth forms by researcher to derive gL and gH using the formula  $[(Y_t - Y_{t-1}) / Y_{t-1} * 100]$ .

**Appendix A (Continued)**

Year	AFF	gAFF	MAN	gMAN	MAQ	gMAQ	REC	gREC
1960	0.02		0.00		0.00		0.01	
1961	0.03	12.00%	0.01	37.50%	0.00	-18.18%	0.01	54.17%
1962	0.04	43.25%	0.01	77.27%	0.00	22.22%	0.01	-6.31%
1963	0.04	8.86%	0.02	52.99%	0.00	9.09%	0.01	24.04%
1964	0.06	53.69%	0.03	46.93%	0.00	0.00%	0.01	-10.85%
1965	0.07	13.08%	0.03	10.27%	0.00	8.33%	0.01	12.17%
1966	0.00	-92.97%	0.04	34.83%	0.00	15.38%	0.03	97.67%
1967	0.00	-22.92%	0.04	1.28%	0.00	33.33%	0.02	-12.16%
1968	0.00	2.70%	0.04	-6.57%	0.00	-40.00%	0.02	-12.05%
1969	0.00	13.16%	0.04	13.24%	0.00	158.33%	0.02	-10.15%
1970	0.01	62.79%	0.08	82.34%	0.01	112.90%	0.03	46.89%
1971	0.01	32.86%	0.12	56.68%	0.01	75.76%	0.04	43.85%
1972	0.02	106.45%	0.14	20.30%	0.01	-12.07%	0.05	31.55%
1973	0.02	12.50%	0.01	-95.63%	0.18	1686.27%	0.08	55.69%
1974	0.03	25.93%	0.26	4003.17%	0.01	-93.30%	0.10	27.68%
1975	0.04	37.50%	0.41	58.88%	0.02	33.61%	0.21	117.59%

**Appendix A (Continued)**

<b>Year</b>	<b>AFF</b>	<b>gAFF</b>	<b>MAN</b>	<b>gMAN</b>	<b>MAQ</b>	<b>gMAQ</b>	<b>REC</b>	<b>gREC</b>
1976	0.08	112.83%	0.61	48.28%	0.01	-10.43%	0.41	93.75%
1977	0.14	74.75%	0.84	37.57%	0.04	158.22%	0.66	60.56%
1978	0.23	64.63%	1.14	35.83%	0.04	4.51%	0.88	33.37%
1979	0.33	43.93%	1.36	19.27%	0.04	11.68%	1.06	19.78%
1980	0.46	40.23%	1.96	44.17%	0.05	15.68%	1.33	25.33%
1981	0.59	27.78%	2.66	35.93%	0.09	72.89%	1.75	32.07%
1982	0.79	33.19%	3.04	14.20%	0.09	7.16%	2.09	19.11%
1983	0.94	19.55%	3.05	0.51%	0.12	25.87%	2.26	8.40%
1984	1.05	11.88%	3.08	1.00%	0.17	39.43%	2.37	5.03%
1985	1.31	24.53%	3.23	4.82%	0.24	42.66%	2.49	5.05%
1986	1.83	39.70%	4.48	38.46%	0.21	-11.90%	2.84	13.90%
1987	2.43	32.61%	4.96	10.86%	0.25	18.41%	2.89	1.83%
1988	3.07	26.35%	6.08	22.51%	0.23	-7.71%	3.01	3.99%
1989	3.47	13.17%	6.67	9.77%	0.27	19.49%	3.23	7.27%
1990	4.22	21.64%	7.88	18.17%	0.36	33.43%	3.21	-0.49%
1991	5.01	18.74%	10.91	38.40%	0.54	49.50%	3.57	11.29%

**Appendix A (Continued)**

<b>Year</b>	<b>AFF</b>	<b>gAFF</b>	<b>MAN</b>	<b>gMAN</b>	<b>MAQ</b>	<b>gMAQ</b>	<b>REC</b>	<b>gREC</b>
1992	6.98	39.22%	15.40	41.17%	0.76	40.22%	4.06	13.61%
1993	10.75	54.08%	23.11	50.03%	1.42	87.46%	5.41	33.15%
1994	17.76	65.14%	34.82	50.68%	10.36	627.37%	3.85	-28.73%
1995	25.28	42.35%	58.09	66.82%	12.07	16.54%	4.38	13.75%
1996	33.26	31.59%	72.24	24.35%	15.05	24.67%	1.19	-72.74%
1997	27.94	-16.01%	82.82	14.65%	20.61	36.95%	4.26	256.91%
1998	27.18	-2.72%	96.73	16.79%	22.85	10.85%	14.65	243.72%
1999	31.05	14.22%	115.76	19.67%	24.68	8.03%	16.52	12.72%
2000	41.03	32.16%	141.29	22.06%	32.29	30.81%	37.51	127.14%
2001	55.85	36.11%	206.89	46.42%	70.48	118.27%	55.86	48.90%
2002	59.85	7.17%	233.47	12.85%	70.17	-0.44%	72.29	29.42%
2003	62.10	3.76%	294.31	26.06%	95.98	36.78%	118.95	64.54%
2004	67.74	9.07%	332.11	12.85%	131.06	36.55%	286.71	141.04%
2005	48.56	-28.31%	352.04	6.00%	172.53	31.65%	309.62	7.99%
2006	49.39	1.71%	445.79	26.63%	251.48	45.76%	366.10	18.24%
2007	149.58	202.83%	487.58	9.37%	490.71	95.13%	416.94	13.88%



**Appendix A (Continued)**

<b>Year</b>	<b>AFF</b>	<b>gAFF</b>	<b>MAN</b>	<b>gMAN</b>	<b>MAQ</b>	<b>gMAQ</b>	<b>REC</b>	<b>gREC</b>
2008	106.35	-28.90%	932.80	91.31%	846.94	72.59%	466.80	11.96%
2009	135.70	27.59%	993.46	6.50%	1190.73	40.59%	778.14	66.70%
2010	128.41	-5.38%	987.64	-0.59%	1178.10	-1.06%	670.30	-13.86%
2011	255.21	98.75%	1053.21	6.64%	1295.30	9.95%	453.50	-32.34%
2012	316.36	23.96%	1068.34	1.44%	1771.50	36.76%	539.76	19.02%
2013	343.70	8.64%	1179.69	10.42%	2155.86	21.70%	726.92	34.68%
2014	377.39	9.80%	1316.96	11.64%	2629.70	21.98%	957.65	31.74%
2015	392.45	3.99%	1378.31	4.66%	2841.47	8.05%	1060.77	10.77%
2016	383.03	-2.40%	1339.92	-2.79%	2708.97	-4.66%	996.25	-6.08%
2017	387.70	1.22%	1358.95	1.42%	2774.64	2.42%	1028.23	3.21%

**Appendix A (Continued)**

<b>Year</b>	<b>BDS</b>	<b>gBDS</b>	<b>DMT</b>	<b>gDMT</b>	<b>EXP</b>	<b>gEXP</b>	<b>IMP</b>	<b>gIMP</b>
1960	0.00		0.04		0.06		0.06	
1961	0.00	-12.00%	0.04	-7.38%	0.06	1.62%	0.06	2.37%
1962	0.01	181.82%	0.06	42.67%	0.06	3.70%	0.06	2.32%
1963	0.01	138.71%	0.06	10.63%	0.07	1.25%	0.06	-5.31%
1964	0.03	103.38%	0.07	8.96%	0.07	0.77%	0.06	-3.51%
1965	0.04	39.87%	0.06	-13.75%	0.07	1.60%	0.03	-41.83%
1966	0.06	42.76%	0.07	14.55%	0.07	-1.51%	0.06	71.36%
1967	0.04	-39.60%	0.04	-38.82%	0.06	-2.58%	0.06	12.24%
1968	0.01	-85.95%	0.05	31.20%	0.06	-10.11%	0.05	-14.49%
1969	0.00	-11.76%	0.06	12.69%	0.07	15.74%	0.03	-41.35%
1970	0.01	31.11%	0.03	-46.14%	0.07	3.89%	0.06	86.02%
1971	0.01	69.49%	0.06	75.16%	0.09	31.94%	0.06	5.34%
1972	0.01	-20.00%	0.07	30.67%	0.09	-1.53%	0.05	-20.44%
1973	0.00	-55.00%	0.08	15.20%	0.09	-4.10%	0.09	83.27%
1974	0.01	288.89%	0.10	15.55%	0.09	5.89%	0.08	-11.85%
1975	0.03	101.43%	0.14	47.09%	0.10	9.71%	0.13	61.04%

**Appendix A (Continued)**

<b>Year</b>	<b>BDS</b>	<b>gBDS</b>	<b>DMT</b>	<b>gDMT</b>	<b>EXP</b>	<b>gEXP</b>	<b>IMP</b>	<b>gIMP</b>
1976	0.02	-15.60%	0.21	45.60%	0.10	-4.08%	0.20	53.60%
1977	0.02	0.00%	0.30	41.60%	0.10	6.11%	0.29	43.72%
1978	0.04	66.81%	0.41	37.51%	0.08	-21.09%	0.34	17.62%
1979	0.06	60.20%	0.44	8.19%	0.08	-3.09%	0.28	-17.66%
1980	0.03	-58.18%	0.63	43.38%	0.10	27.97%	0.45	60.42%
1981	0.01	-45.19%	0.83	30.40%	0.11	6.89%	0.54	20.65%
1982	0.02	19.58%	1.09	32.00%	0.15	40.52%	0.58	8.01%
1983	0.02	31.74%	1.07	-2.35%	0.14	-8.50%	0.52	-10.42%
1984	0.01	-42.18%	1.20	12.29%	0.13	-3.05%	0.49	-6.00%
1985	0.02	15.67%	1.42	18.37%	0.12	-8.16%	0.51	3.97%
1986	0.01	-49.00%	1.73	21.68%	0.31	154.08%	0.72	40.57%
1987	0.01	19.74%	1.96	13.72%	0.46	48.48%	0.61	-14.63%
1988	0.01	-32.88%	2.34	19.08%	0.48	3.29%	0.80	30.89%
1989	0.02	185.62%	2.74	17.14%	0.60	26.36%	0.88	9.94%
1990	0.31	1612.54%	2.76	0.93%	0.75	23.77%	1.02	15.80%
1991	0.12	-60.23%	3.04	9.89%	0.94	26.18%	1.00	-2.00%

**Appendix A (Continued)**

<b>Year</b>	<b>BDS</b>	<b>gBDS</b>	<b>DMT</b>	<b>gDMT</b>	<b>EXP</b>	<b>gEXP</b>	<b>IMP</b>	<b>gIMP</b>
1992	0.73	494.94%	3.71	22.35%	1.32	39.69%	1.63	63.12%
1993	0.19	-73.40%	9.96	168.29%	1.61	22.13%	1.92	17.74%
1994	0.14	-28.72%	6.80	-31.76%	7.61	373.36%	1.39	-27.83%
1995	0.16	13.74%	7.88	15.87%	19.44	155.39%	1.57	13.15%
1996	0.04	-71.57%	0.54	-93.14%	33.00	69.72%	0.37	-76.73%
1997	0.02	-56.36%	0.67	24.17%	16.37	-50.40%	1.36	272.03%
1998	-0.01	-128.65%	0.80	19.39%	29.77	81.87%	4.58	237.15%
1999	-0.01	-80.55%	0.82	2.91%	18.77	-36.94%	5.16	12.62%
2000	-0.06	-502.66%	1.09	31.90%	25.31	34.81%	11.68	126.23%
2001	-0.11	-72.86%	1.32	21.13%	34.53	36.45%	17.37	48.74%
2002	-0.14	-37.76%	1.52	15.63%	26.71	-22.65%	22.47	29.36%
2003	-0.26	-77.83%	2.11	38.37%	34.47	29.05%	36.95	64.44%
2004	-0.66	-157.36%	4.21	99.70%	31.35	-9.05%	89.00	140.90%
2005	-0.72	-8.35%	4.50	6.82%	26.43	-15.69%	96.11	7.99%
2006	-0.85	-19.00%	5.21	15.74%	52.69	99.36%	113.64	18.24%
2007	-0.98	-14.37%	5.84	12.24%	66.55	26.32%	129.41	13.88%

**Appendix A (Continued)**

<b>Year</b>	<b>BDS</b>	<b>gBDS</b>	<b>DMT</b>	<b>gDMT</b>	<b>EXP</b>	<b>gEXP</b>	<b>IMP</b>	<b>gIMP</b>
2008	-1.10	-12.32%	6.47	10.70%	75.19	12.98%	144.88	11.96%
2009	-1.24	-12.90%	7.20	11.36%	45.87	-39.00%	1199.21	727.72%
2010	-1.41	-13.81%	8.09	12.33%	44.81	-2.32%	898.38	-25.09%
2011	-1.53	-8.16%	8.69	7.38%	36.18	-19.25%	755.68	-15.88%
2012	-1.63	-6.93%	9.24	6.31%	65.61	81.35%	690.96	-8.56%
2013	-1.77	-8.52%	9.96	7.80%	3.93	-94.00%	762.77	10.39%
2014	-1.94	-9.67%	10.85	8.92%	-72.10	-1932.33%	851.28	11.60%
2015	-2.02	-3.94%	11.24	3.66%	-106.08	-47.13%	890.85	4.65%
2016	-1.97	2.37%	10.99	-2.21%	-84.82	20.04%	866.09	-2.78%
2017	-1.99	-1.20%	11.12	1.12%	-95.36	-12.42%	878.36	1.42%

**Appendix A (Continued)**

<b>Year</b>	<b>PUT</b>	<b>gPUT</b>	<b>TRC</b>	<b>gTRC</b>	<b>CFI</b>	<b>gCFI</b>
1960	0.00		0.01		0.01	
1961	0.00	-81.82%	0.01	-0.86%	0.00	-16.95%
1962	0.00	100.00%	0.01	1.88%	0.00	-65.31%
1963	0.00	400.00%	0.01	8.45%	0.00	52.94%
1964	0.00	-20.00%	0.01	4.88%	0.01	180.77%
1965	0.00	106.25%	0.01	-0.63%	0.00	-56.16%
1966	0.00	-63.64%	0.01	1.06%	0.01	137.50%
1967	0.00	191.67%	0.01	-15.53%	0.01	19.74%
1968	0.00	-31.43%	0.01	5.75%	0.01	0.00%
1969	0.00	-29.17%	0.01	6.52%	0.00	-48.35%
1970	0.00	-58.82%	0.02	93.88%	0.00	-42.55%
1971	0.00	414.29%	0.03	67.37%	0.01	114.81%
1972	0.01	44.44%	0.04	39.62%	0.01	144.83%
1973	0.01	113.46%	0.05	16.44%	0.01	-16.90%
1974	0.01	-34.23%	0.07	27.47%	0.02	83.05%
1975	0.02	134.25%	0.08	24.43%	0.05	138.89%
1976	0.02	25.73%	0.18	120.37%	0.05	-0.97%
1977	0.05	112.56%	0.23	29.28%	0.10	87.08%
1978	0.06	36.32%	0.28	21.79%	0.15	57.74%
1979	0.06	-8.35%	0.33	17.54%	0.08	-46.09%
1980	0.09	54.12%	0.49	45.16%	0.21	154.37%
1981	0.18	101.36%	0.61	25.73%	0.36	74.47%
1982	0.19	8.97%	0.71	15.84%	0.40	11.61%
1983	0.18	-6.11%	0.72	1.58%	0.81	101.17%
1984	0.20	10.70%	0.74	2.83%	0.75	-7.02%
1985	0.24	21.57%	0.74	0.70%	0.54	-28.54%
1986	0.24	-0.78%	0.73	-1.80%	0.82	52.95%
1987	0.23	-4.05%	0.80	9.69%	1.10	33.87%
1988	0.26	11.06%	0.89	10.56%	0.19	-82.55%
1989	0.20	-22.29%	0.82	-7.25%	0.48	148.99%
1990	0.22	7.48%	0.94	13.85%	0.72	50.19%

**Appendix A (Continued)**

Year	PUT	gPUT	TRC	gTRC	CFI	gCFI
1991	0.22	0.79%	1.13	21.29%	0.76	5.13%
1992	0.31	42.03%	1.34	17.84%	1.12	48.00%
1993	0.47	51.38%	2.15	60.90%	1.80	61.00%
1994	0.33	-29.53%	1.52	-29.18%	1.24	-31.00%
1995	0.38	14.29%	1.74	14.05%	1.43	15.32%
1996	0.07	-80.62%	0.41	-76.31%	0.15	-89.85%
1997	0.38	416.90%	8.72	2018.06%	3.61	2380.91%
1998	1.40	271.08%	37.83	333.99%	15.64	333.42%
1999	1.58	13.10%	43.05	13.80%	17.80	13.80%
2000	3.65	130.54%	101.90	136.67%	42.11	136.62%
2001	5.45	49.46%	153.30	50.45%	63.35	50.44%
2002	7.06	29.65%	199.34	30.04%	82.37	30.03%
2003	11.65	64.93%	330.09	65.59%	136.39	65.58%
2004	28.14	141.55%	800.19	142.42%	330.63	142.41%
2005	30.39	8.00%	864.38	8.02%	357.15	8.02%
2006	35.95	18.27%	1022.67	18.31%	422.56	18.31%
2007	40.94	13.90%	1165.12	13.93%	481.41	13.93%
2008	45.84	11.97%	1304.85	11.99%	539.15	11.99%
2009	74.78	63.12%	776.58	-40.49%	1230.61	128.25%
2010	50.63	-32.29%	821.02	5.72%	871.44	-29.19%
2011	68.54	35.37%	1266.95	54.31%	303.26	-65.20%
2012	29.27	-57.30%	966.25	-23.73%	249.08	-17.86%
2013	215.21	635.24%	1392.03	44.06%	322.89	29.63%
2014	444.43	106.51%	1916.92	37.71%	413.87	28.18%
2015	546.87	23.05%	2151.51	12.24%	454.54	9.83%
2016	482.77	-11.72%	2004.73	-6.82%	429.09	-5.60%
2017	514.54	6.58%	2077.48	3.63%	441.70	2.94%

**Appendix A (Continued)**

<b>Year</b>	<b>GOV</b>	<b>gGOV</b>	<b>PPF</b>	<b>gPPF</b>	<b>MIS</b>	<b>gMIS</b>
1960	0.00		0.01		0.02	
1961	0.00	-19.05%	0.01	0.21%	0.03	14.57%
1962	0.00	-11.76%	0.01	-4.23%	0.03	4.59%
1963	0.00	-6.67%	0.01	-11.63%	0.03	-14.19%
1964	0.00	35.71%	0.01	-8.24%	0.04	48.43%
1965	0.00	5.26%	0.01	112.60%	0.05	33.16%
1966	0.00	-35.00%	0.01	-53.34%	0.02	-64.34%
1967	0.00	30.77%	0.01	30.36%	0.01	-32.40%
1968	0.00	70.59%	0.01	-1.37%	0.02	26.45%
1969	0.00	68.97%	0.01	59.72%	0.02	7.84%
1970	0.00	-73.47%	0.02	102.61%	0.02	27.27%
1971	0.00	176.92%	0.03	42.06%	0.02	18.57%
1972	0.01	150.00%	0.06	87.01%	0.04	60.64%
1973	0.02	95.56%	0.04	-30.53%	0.06	61.25%
1974	0.03	80.11%	0.06	45.12%	0.07	6.36%
1975	0.04	17.67%	0.08	35.90%	0.08	22.16%
1976	0.06	51.21%	0.10	16.16%	0.07	-18.50%
1977	0.09	55.67%	1.38	1297.56%	0.09	25.33%
1978	0.13	49.77%	0.20	-85.19%	0.12	44.74%
1979	0.17	26.62%	0.20	-2.31%	0.14	12.83%
1980	0.16	-3.72%	0.22	11.60%	0.18	29.97%
1981	0.31	92.70%	0.32	45.39%	0.24	31.32%
1982	0.37	19.16%	0.27	-15.46%	0.77	224.56%
1983	0.59	60.01%	0.63	130.88%	0.70	-10.16%
1984	0.58	-1.60%	0.79	25.04%	0.73	5.51%
1985	0.55	-4.66%	0.31	-60.76%	0.77	4.66%
1986	0.51	-6.84%	0.37	19.29%	1.28	66.95%
1987	0.64	25.00%	0.56	51.99%	0.63	-51.08%
1988	0.77	20.39%	0.85	51.00%	0.61	-3.25%
1989	0.84	8.66%	1.15	35.84%	0.65	7.33%



**Appendix A (Continued)**

<b>Year</b>	<b>GOV</b>	<b>gGOV</b>	<b>PPF</b>	<b>gPPF</b>	<b>MIS</b>	<b>gMIS</b>
1990	1.16	37.68%	1.33	15.73%	1.12	72.22%
1991	1.00	-13.94%	1.68	26.33%	1.38	22.78%
1992	1.24	24.25%	2.18	29.44%	1.96	42.31%
1993	1.74	40.42%	1.35	-38.03%	5.32	171.32%
1994	1.20	-31.09%	1.36	0.64%	33.99	539.04%
1995	1.38	15.38%	1.36	-0.22%	29.69	-12.66%
1996	0.16	-88.20%	0.21	-84.44%	15.89	-46.48%
1997	4.67	2758.12%	0.23	7.45%	237.81	1396.86%
1998	20.61	341.54%	0.24	6.91%	96.36	-59.48%
1999	23.47	13.87%	0.25	1.16%	132.50	37.50%
2000	55.70	137.28%	0.28	12.91%	268.38	102.55%
2001	83.84	50.54%	0.30	9.99%	428.42	59.63%
2002	109.06	30.08%	0.33	8.14%	564.43	31.75%
2003	180.66	65.65%	0.40	21.36%	723.18	28.13%
2004	438.10	142.50%	0.65	63.29%	956.99	32.33%
2005	473.26	8.02%	0.69	5.29%	1377.15	43.90%
2006	559.94	18.32%	0.77	12.40%	1724.95	25.25%
2007	637.95	13.93%	0.85	9.92%	3619.07	109.81%
2008	714.47	12.00%	0.92	8.86%	2622.12	-27.55%
2009	352.20	-50.71%	1.01	9.56%	2134.87	-18.58%
2010	374.41	6.31%	1.12	10.55%	1681.29	-21.25%
2011	499.45	33.40%	1.19	6.42%	1325.45	-21.17%
2012	632.77	26.69%	1.26	5.54%	1870.08	41.09%
2013	718.74	13.59%	1.34	6.90%	2183.86	16.78%
2014	824.73	14.75%	1.45	7.95%	2570.67	17.71%
2015	872.10	5.74%	1.50	3.29%	2743.56	6.73%
2016	842.46	-3.40%	1.47	-1.99%	2635.38	-3.94%
2017	857.15	1.74%	1.48	1.01%	2689.00	2.03%

### Appendix A (Continued)

Main Sector	Variable	Explanation
<b>Production</b>	AFF	Aggregate bank lending to Agriculture, Forestry and Fishery sub-sector
	MAN	Aggregate bank lending to Manufacturing sub-sector
	MAQ	Aggregate bank lending to Mining and Quarrying sub-sector
	REC	Aggregate bank lending to Real Estate and Construction sub-sector
<b>General Commerce</b>	BDS	Aggregate bank lending to Bills Discounted sub-sector
	DMT	Aggregate bank lending to Domestic Trade sub-sector
	EXP	Aggregate bank lending to Export sub-sector
	IMP	Aggregate bank lending to Import sub-sector
<b>Services</b>	PUT	Aggregate bank lending to Public Utilities sub-sector
	TRC	Aggregate bank lending to Transport and Communications sub-sector
	CFI	Aggregate bank lending to Credit to Financial Institutions sub-sector
<b>Others</b>	GOV	Aggregate bank lending to Government sub-sector
	PPF	Aggregate bank lending to Personal and Professional sub-sector
	MIS	Aggregate bank lending to Miscellaneous sub-sector

\*\*\*\*NOTE: Data collected from CBN Statistical Bulletins 2011 and 2016 (in ₦' Billion). Variables computed to growth forms by researcher using the formula  $[(Y_t - Y_{t-1}) / Y_{t-1} * 100]$ .

## Appendix B: Aggregated Data Presentation

Year	PRO	gPRO	GNC	gGNC	SVC	gSVC	OTS	gOTS
1960	0.0356		0.165803		0.015928		0.034054	
1961	0.0438	23.03%	0.164817	-0.59%	0.013951	-12.41%	0.03727	9.44%
1962	0.0593	35.39%	0.189148	14.76%	0.011118	-20.31%	0.038063	2.13%
1963	0.0713	20.24%	0.201124	6.33%	0.014379	29.34%	0.032953	-13.42%
1964	0.0994	39.41%	0.220343	9.56%	0.019157	33.22%	0.045246	37.30%
1965	0.1115	12.17%	0.200191	-9.15%	0.016692	-12.87%	0.064203	41.90%
1966	0.0709	-36.41%	0.249396	24.58%	0.0191	14.43%	0.0248	-61.37%
1967	0.0677	-4.51%	0.205235	-17.71%	0.0213	11.52%	0.0211	-14.92%
1968	0.0617	-8.86%	0.170849	-16.75%	0.0207	-2.82%	0.0254	20.38%
1969	0.067	8.59%	0.163383	-4.37%	0.0162	-21.74%	0.0329	29.53%
1970	0.116	73.13%	0.1675	2.52%	0.0224	38.27%	0.0456	38.60%
1971	0.178	53.45%	0.2212	32.06%	0.0412	83.93%	0.0616	35.09%
1972	0.2226	25.06%	0.2222	0.45%	0.0638	54.85%	0.1109	80.03%
1973	0.2867	28.80%	0.2671	20.21%	0.0746	16.93%	0.1251	12.80%
1974	0.3957	38.02%	0.2849	6.66%	0.0948	27.08%	0.1627	30.06%
1975	0.6772	71.14%	0.4037	41.70%	0.1507	58.97%	0.2059	26.55%

### Appendix B (Continued)

Year	PRO	gPRO	GNC	gGNC	SVC	gSVC	OTS	gOTS
1976	1.1155	64.72%	0.531	31.53%	0.2533	68.08%	0.2232	8.40%
1977	1.6766	50.30%	0.712	34.09%	0.3749	48.01%	1.55	594.44%
1978	2.2893	36.54%	0.8687	22.01%	0.4976	32.73%	0.4593	-70.37%
1979	2.7884	21.80%	0.8637	-0.58%	0.4728	-4.98%	0.5055	10.06%
1980	3.7953	36.11%	1.2093	40.01%	0.7802	65.02%	0.5643	11.63%
1981	5.0889	34.08%	1.48958	23.18%	1.1483	47.18%	0.8707	54.30%
1982	6.0035	17.97%	1.843935	23.79%	1.3028	13.45%	1.415734	62.60%
1983	6.3724	6.14%	1.750169	-5.09%	1.7096	31.23%	1.915532	35.30%
1984	6.6749	4.75%	1.835981	4.90%	1.6924	-1.01%	2.102369	9.75%
1985	7.2722	8.95%	2.066662	12.56%	1.5259	-9.84%	1.630314	-22.45%
1986	9.3539	28.63%	2.762635	33.68%	1.7956	17.67%	2.166525	32.89%
1987	10.527	12.54%	3.046782	10.29%	2.1354	18.92%	1.8321	-15.44%
1988	12.3799	17.60%	3.622497	18.90%	1.336	-37.44%	2.2291	21.67%
1989	13.6405	10.18%	4.240285	17.05%	1.5008	12.34%	2.6444	18.63%
1990	15.6783	14.94%	4.8387	14.11%	1.8699	24.59%	3.6132	36.64%

**Appendix B (Continued)**

Year	PRO	gPRO	GNC	gGNC	SVC	gSVC	OTS	gOTS
1991	20.039	27.81%	5.1016	5.43%	2.1076	12.71%	4.058	12.31%
1992	27.2019	35.74%	7.3925	44.91%	2.7642	31.15%	5.3782	32.53%
1993	40.6929	49.60%	13.68789	85.16%	4.4193	59.88%	8.409127	56.36%
1994	66.79172	64.14%	15.93766	16.44%	3.095248	-29.96%	36.54787	334.62%
1995	99.82295	49.45%	29.04808	82.26%	3.546804	14.59%	32.42519	-11.28%
1996	121.7461	21.96%	33.94901	16.87%	0.62988	-82.24%	16.26154	-49.85%
1997	135.6364	11.41%	18.41902	-45.75%	12.70185	1916.55%	242.7033	1392.50%
1998	161.4144	19.01%	35.14951	90.83%	54.86726	331.96%	117.2183	-51.70%
1999	188.0056	16.47%	24.74855	-29.59%	62.43065	13.78%	156.2209	33.27%
2000	252.1269	34.11%	38.01188	53.59%	147.6487	136.50%	324.3548	107.63%
2001	389.0699	54.32%	53.11428	39.73%	222.0913	50.42%	512.569	58.03%
2002	435.7845	12.01%	50.55608	-4.82%	288.7797	30.03%	673.8157	31.46%
2003	571.3367	31.11%	73.26391	44.92%	478.1335	65.57%	904.2378	34.20%
2004	817.6157	43.11%	123.8954	69.11%	1158.962	142.39%	1395.742	54.36%
2005	882.748	7.97%	126.3157	1.95%	1251.931	8.02%	1851.096	32.62%

**Appendix B (Continued)**

Year	PRO	gPRO	GNC	gGNC	SVC	gSVC	OTS	gOTS
2006	1112.766	26.06%	170.6737	35.12%	1481.175	18.31%	2285.661	23.48%
2007	1544.803	38.83%	200.8258	17.67%	1687.472	13.93%	4257.866	86.29%
2008	2352.897	52.31%	225.4443	12.26%	1889.842	11.99%	3337.512	-21.62%
2009	3098.03	31.67%	1251.042	454.92%	2081.967	10.17%	2488.08	-25.45%
2010	2964.45	-4.31%	949.87	-24.07%	1743.086	-16.28%	2056.824	-17.33%
2011	3057.221	3.13%	799.0191	-15.88%	1638.75	-5.99%	1826.089	-11.22%
2012	3695.962	20.89%	764.1803	-4.36%	1244.605	-24.05%	2504.101	37.13%
2013	4406.172	19.22%	774.8882	1.40%	1930.124	55.08%	2903.941	15.97%
2014	5281.7	19.87%	788.0887	1.70%	2775.214	43.78%	3396.852	16.97%
2015	5673.009	7.41%	793.9885	0.75%	3152.919	13.61%	3617.154	6.49%
2016	5428.171	-4.32%	790.297	-0.46%	2916.593	-7.50%	3479.314	-3.81%
2017	5549.521	2.24%	792.1266	0.23%	3033.724	4.02%	3547.632	1.96%

### Appendix B (Continued)

Variable	Explanation
PRO	Aggregate bank lending to Production sector
GNC	Aggregate bank lending to General Commerce sector
SVC	Aggregate bank lending to Services sector
OTS	Aggregate bank lending to 'others' sector

\*\*\*\*NOTE: Data collected from CBN Statistical Bulletins 2011 and 2016 (in ₦' Billion). Variables computed to growth forms by researcher using the formula  $[(Y_t - Y_{t-1}) / Y_{t-1} * 100]$ .

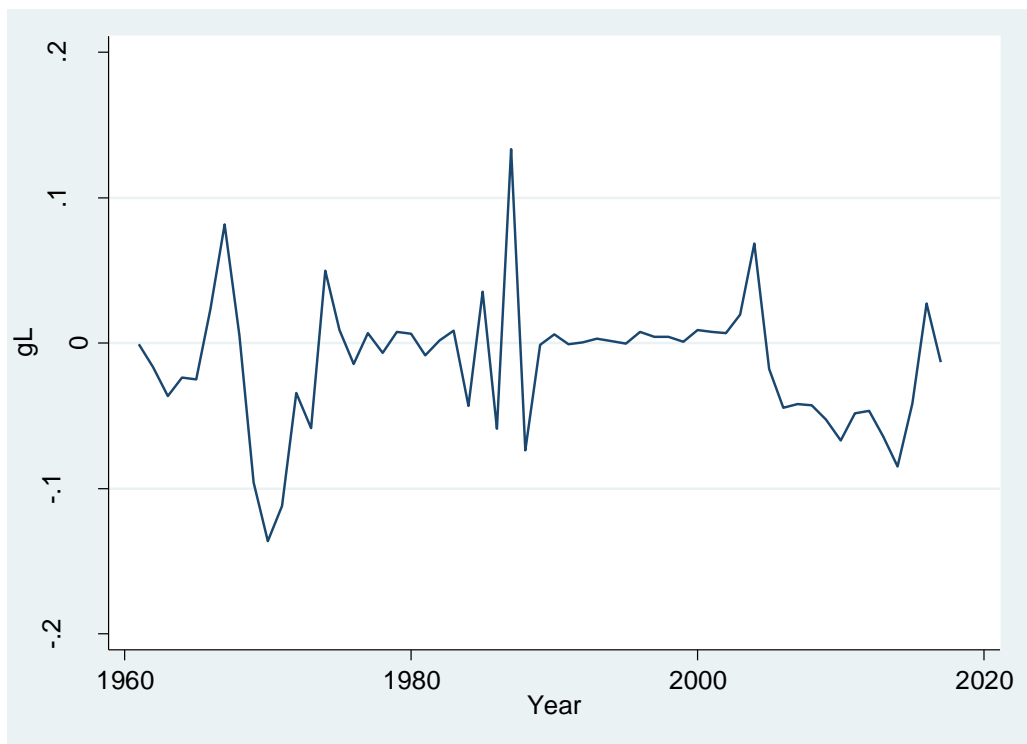
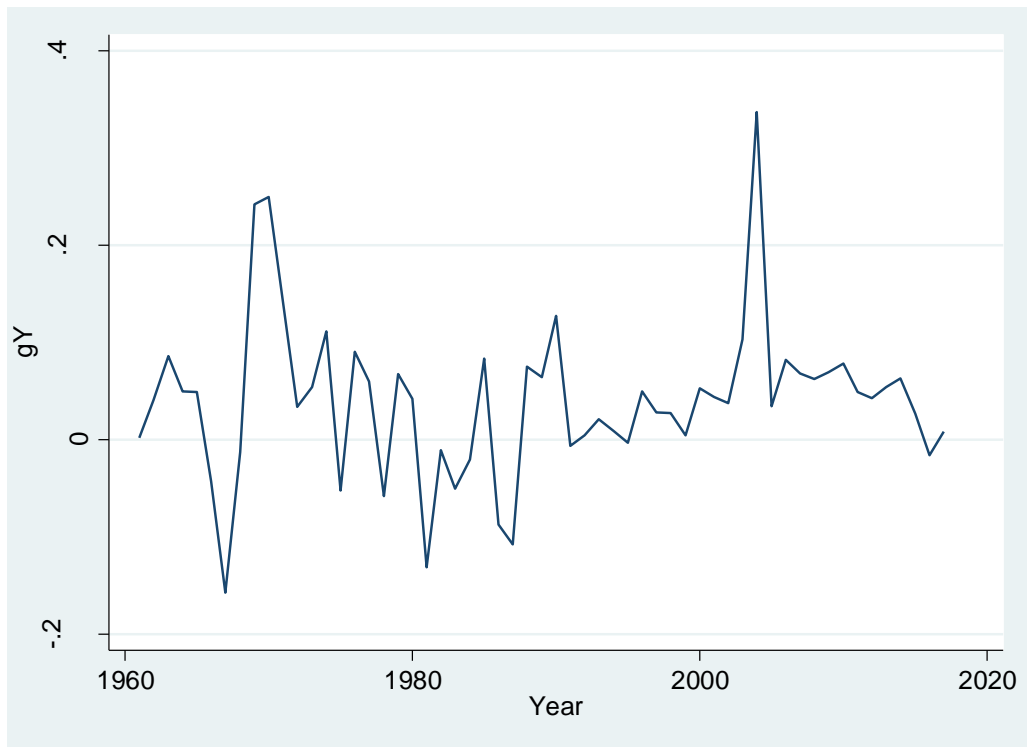
**Appendix C: List of Commercial Banks in Nigeria as at 01/01/2019**

	<b>Commercial Banks in Nigeria</b>
1	Access bank Plc
2	Citibank Nigeria Limited
3	Diamond Bank Plc
4	Ecobank Nigeria Plc
5	Fidelity Bank Plc
6	First Bank Nigeria Limited
7	First City Monument Bank Plc
8	Guaranty Trust Bank Plc
9	Heritage Banking Company Ltd
10	Keystone Bank
11	Polaris Bank
12	Providus Bank
13	Stanbic IBTC Bank Ltd
14	Standard Chartered Bank Nigeria Ltd
15	Sterling Bank Plc
16	SunTrust Bank Nigeria Limited
17	Union Bank of Nigeria Plc
18	United Bank for Africa Plc
19	Unity Bank Plc
20	Wema Bank Plc
21	Zenith Bank Plc

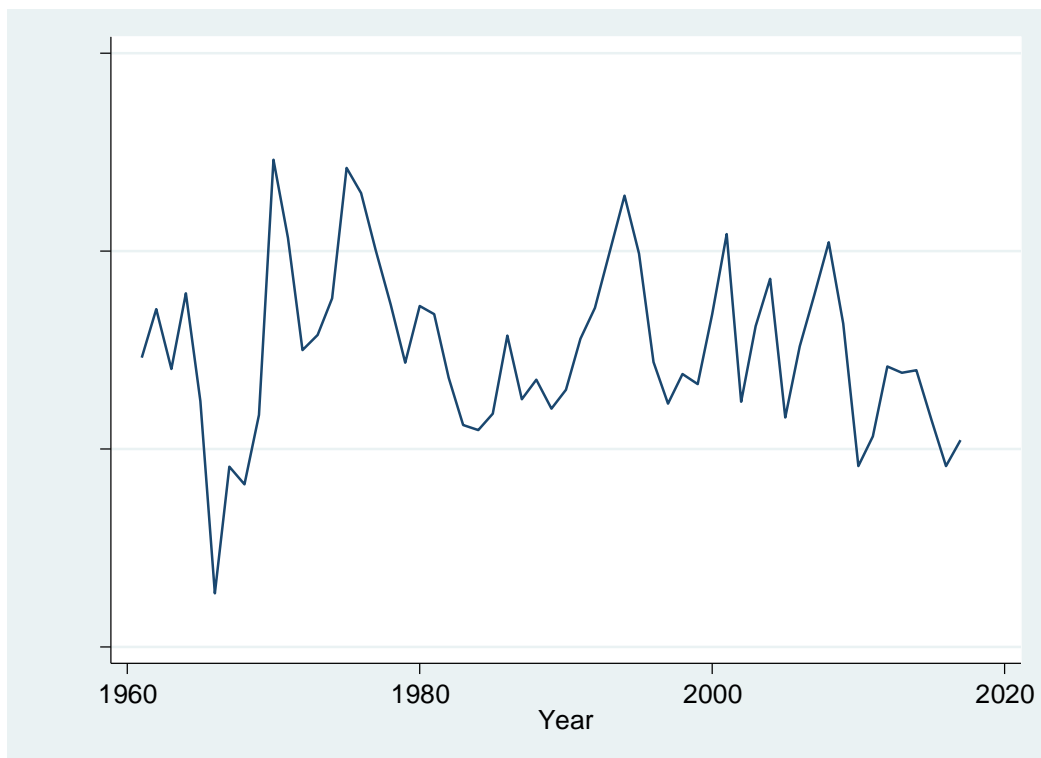
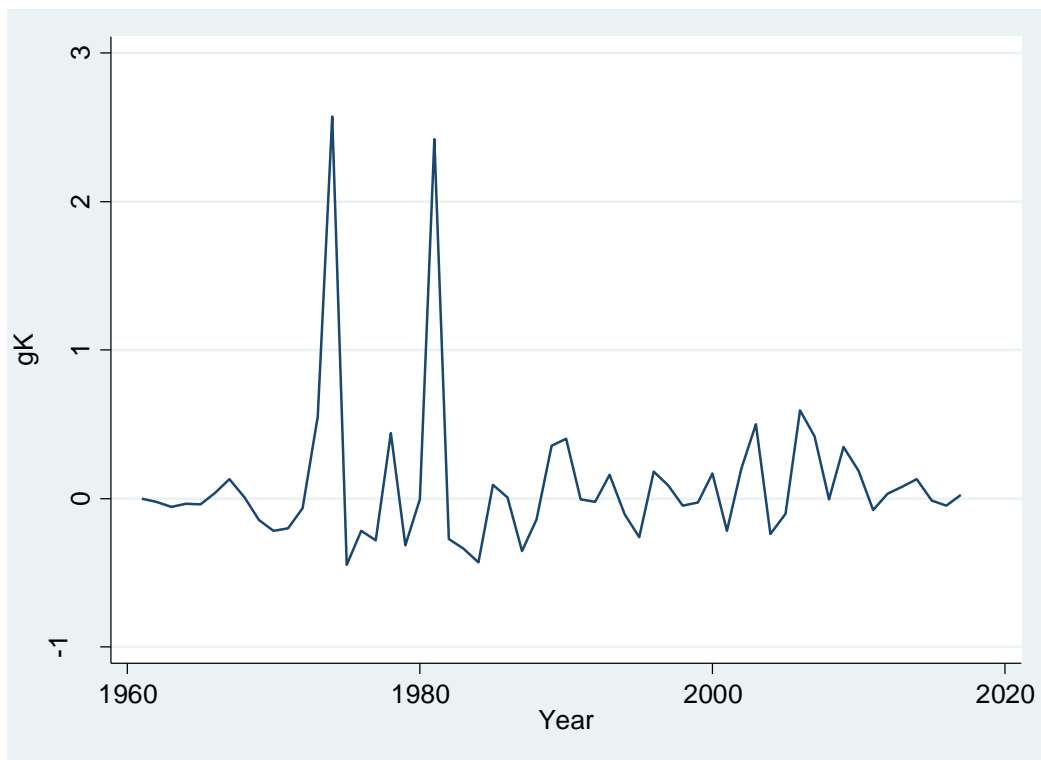
**Source: CBN (2019)**



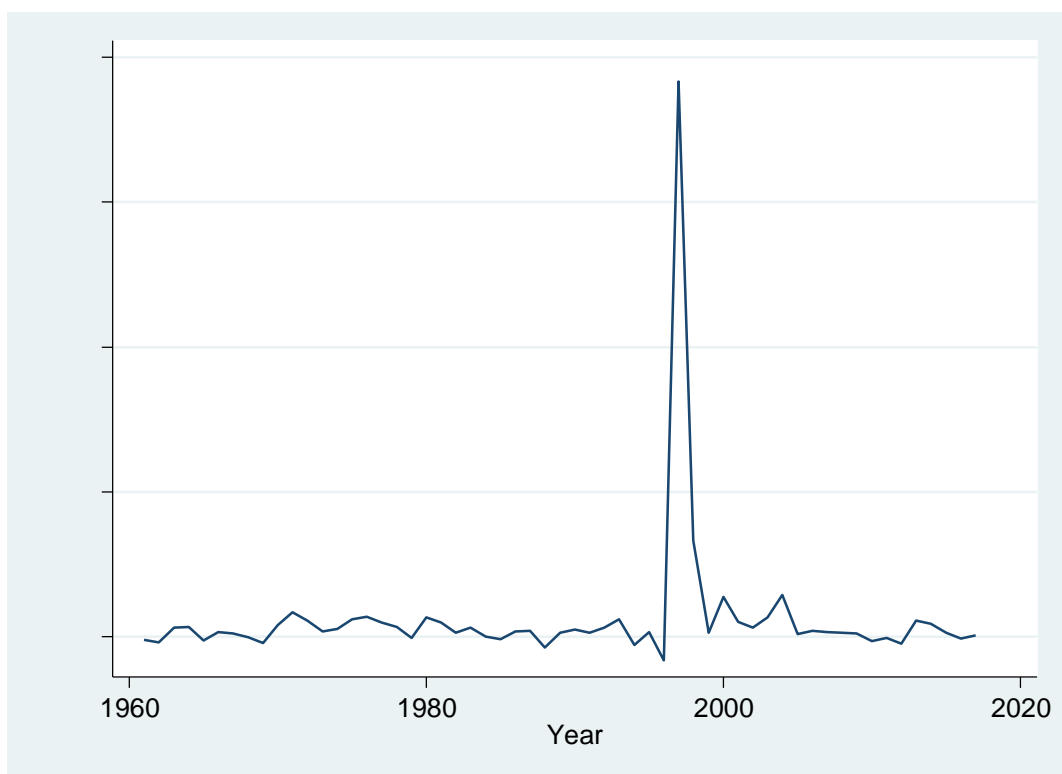
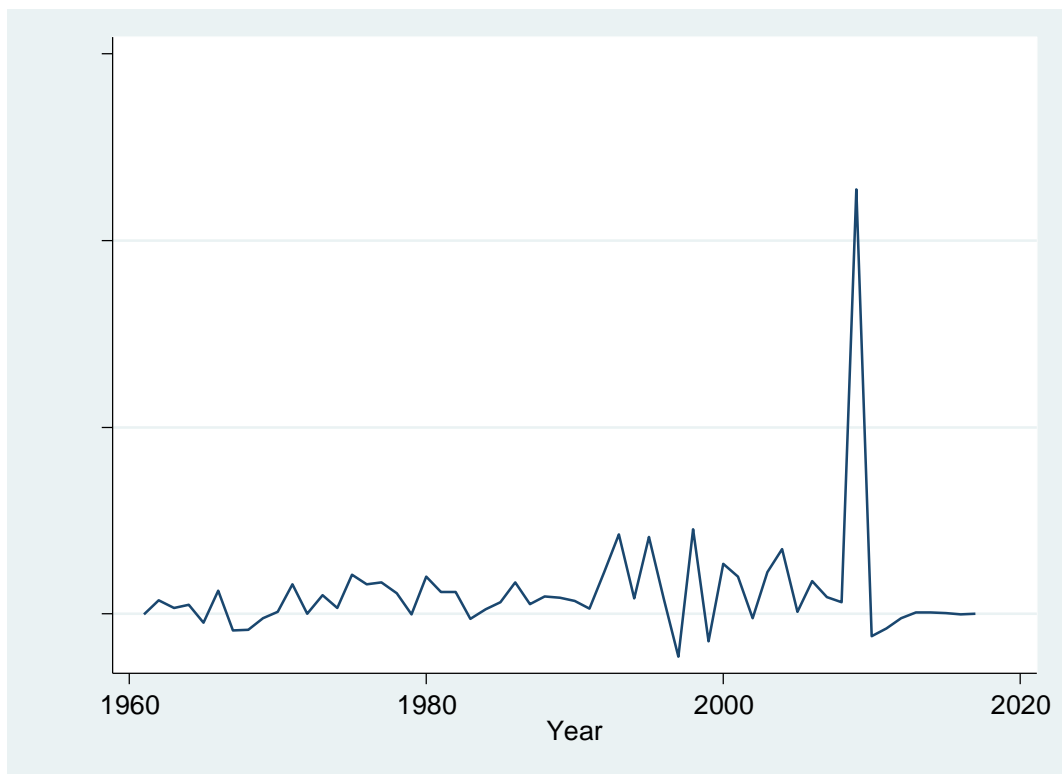
## Appendix D: Time Series Graphs



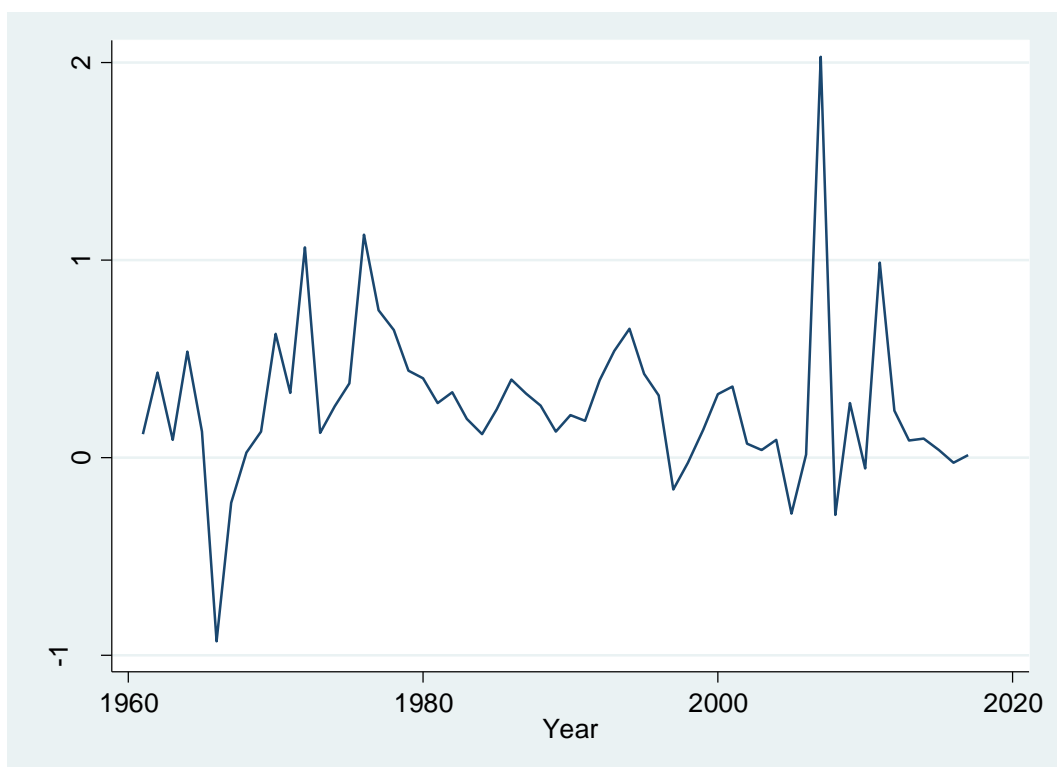
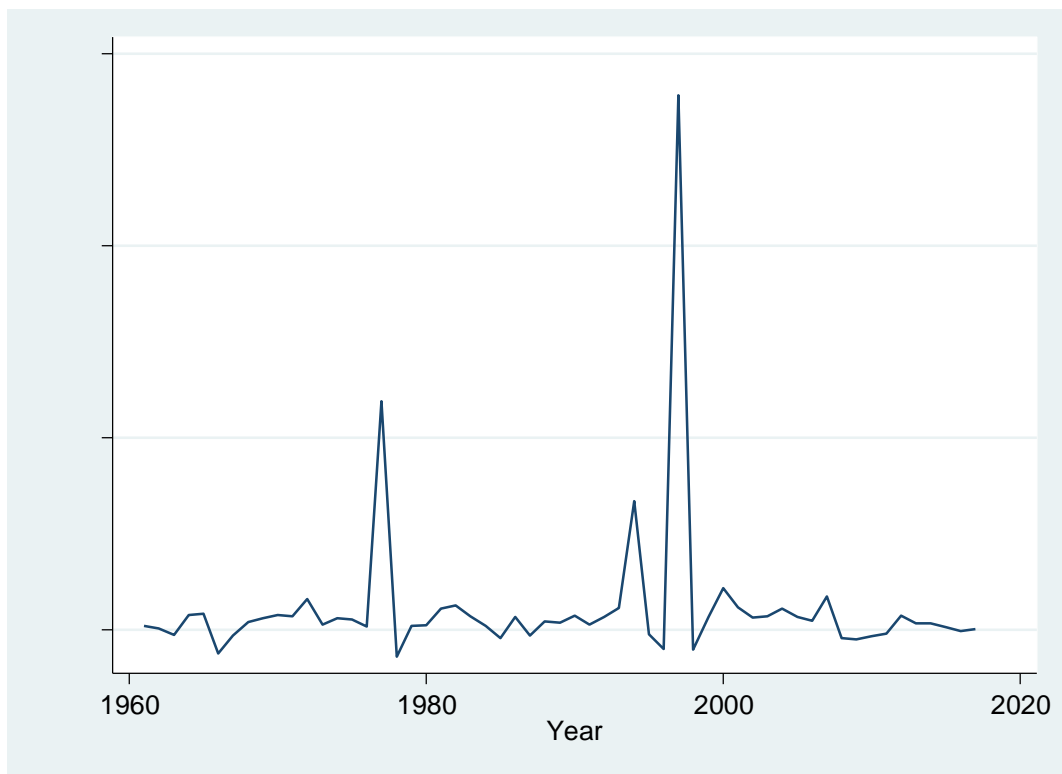
## Appendix D (Continued)



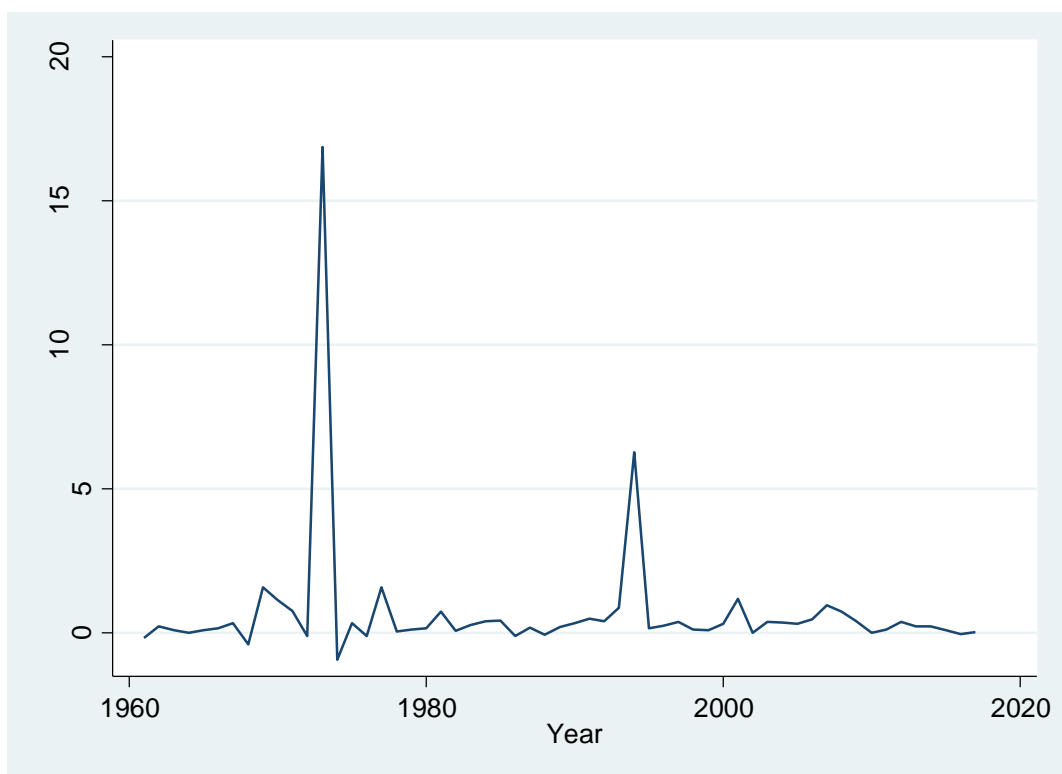
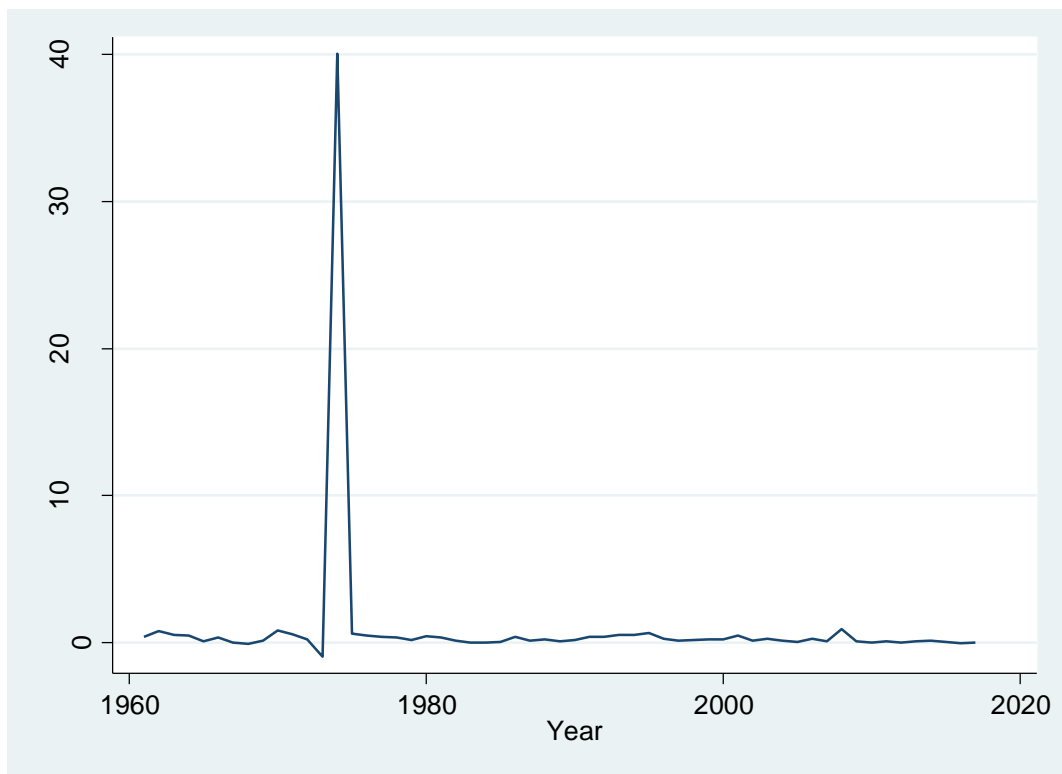
## Appendix D (Continued)



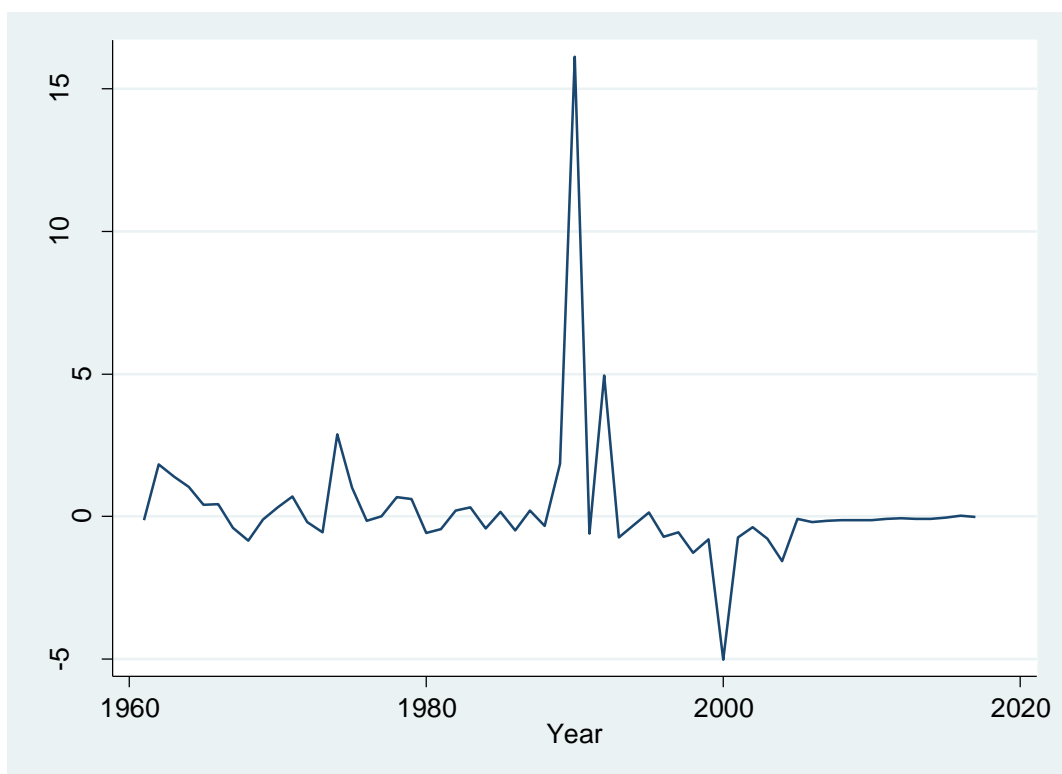
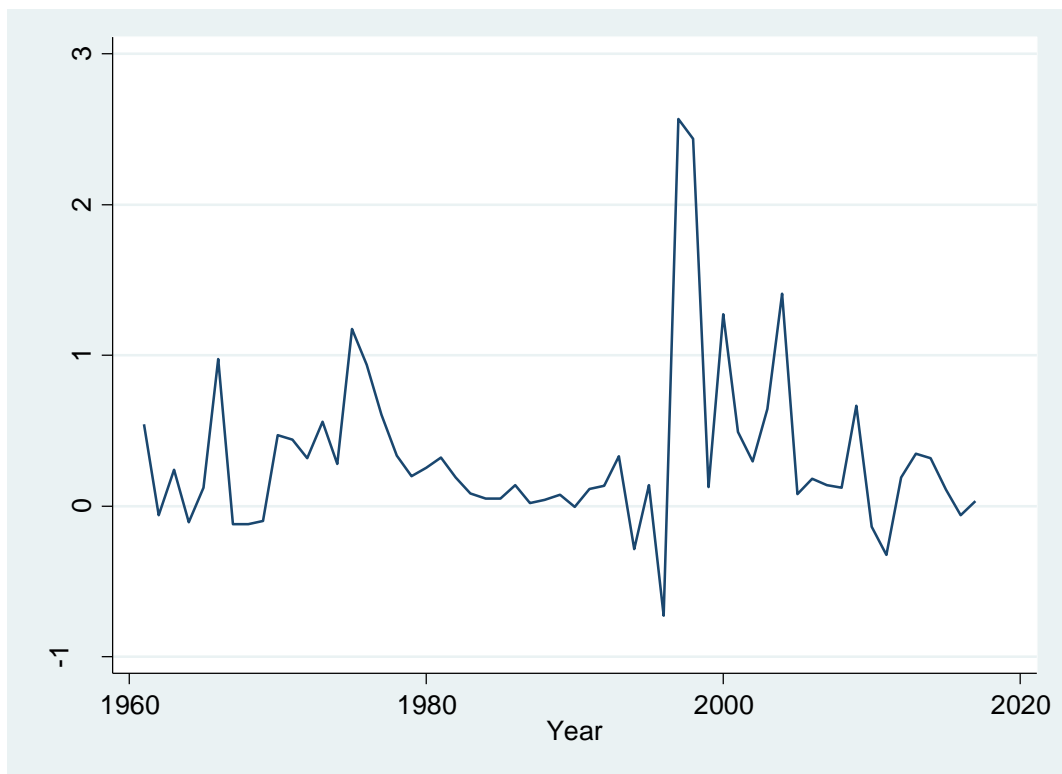
## Appendix D (Continued)



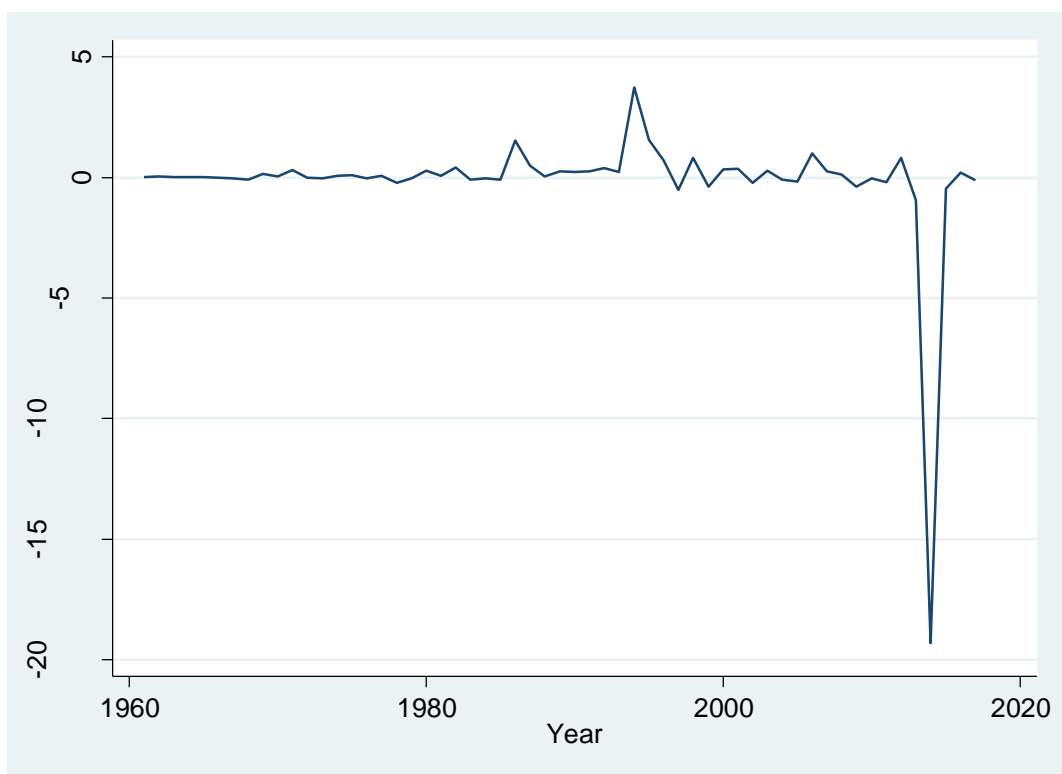
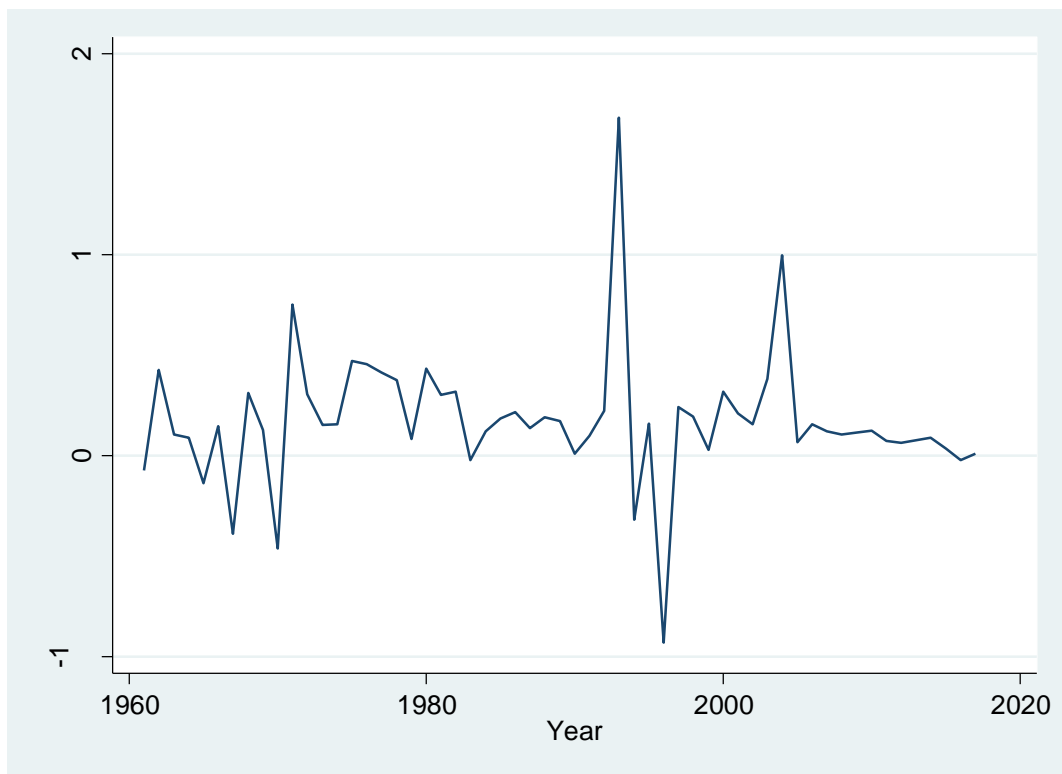
## Appendix D (Continued)



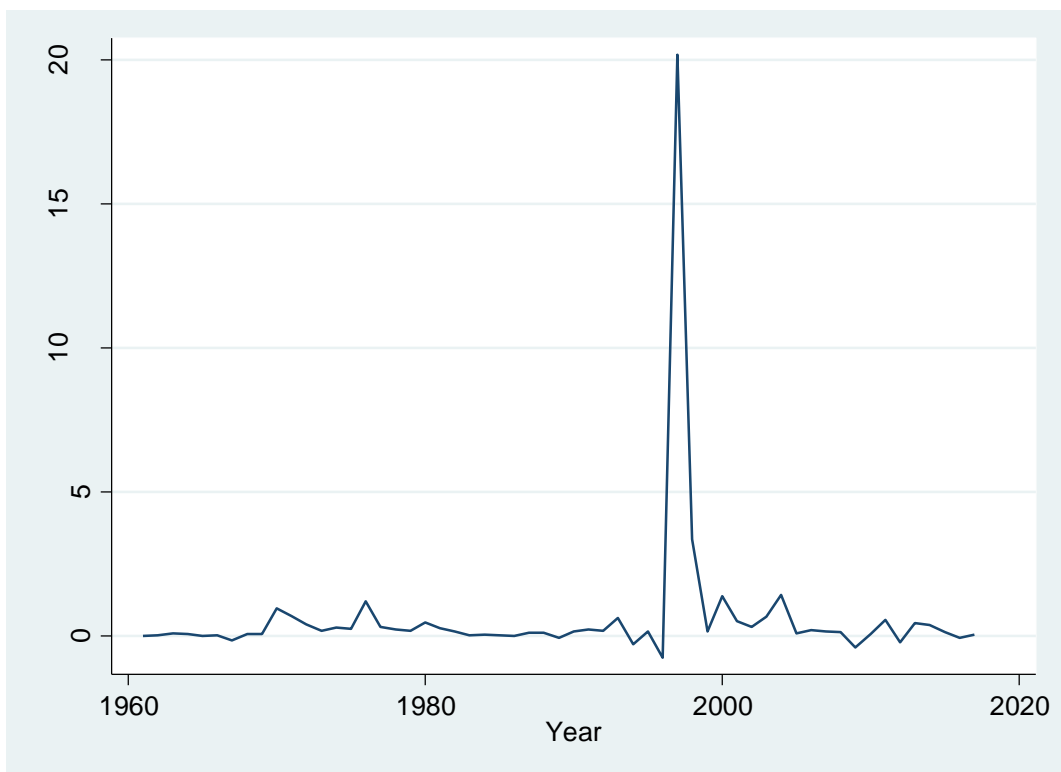
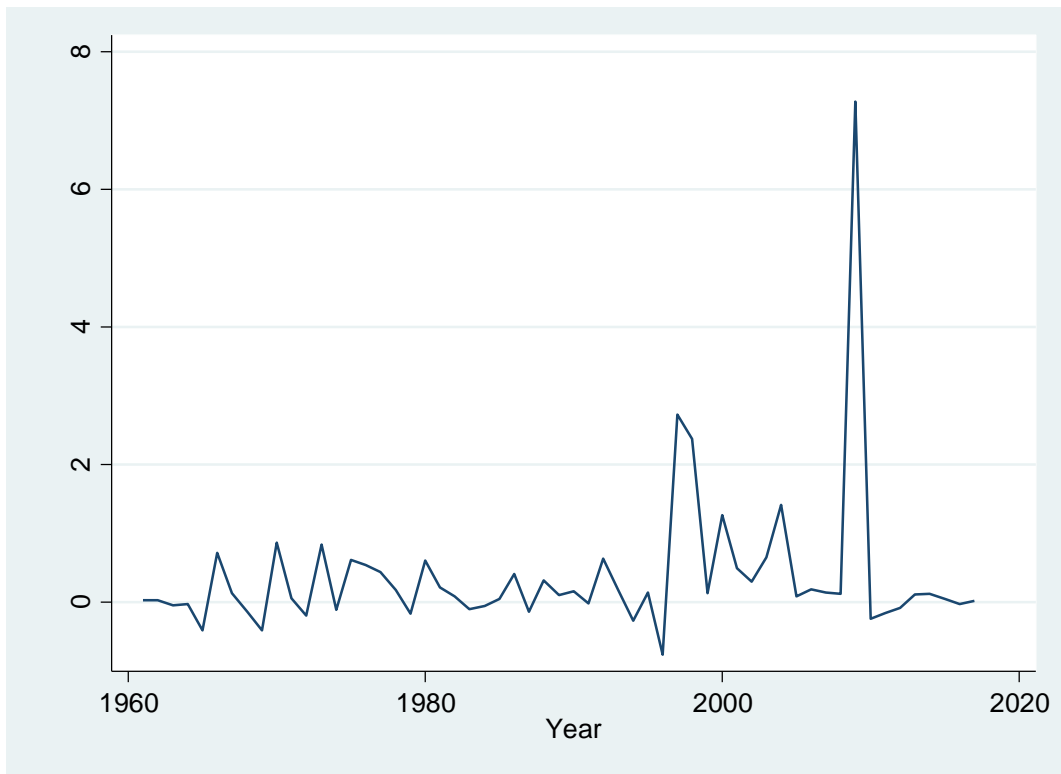
## Appendix D (Continued)



## Appendix D (Continued)

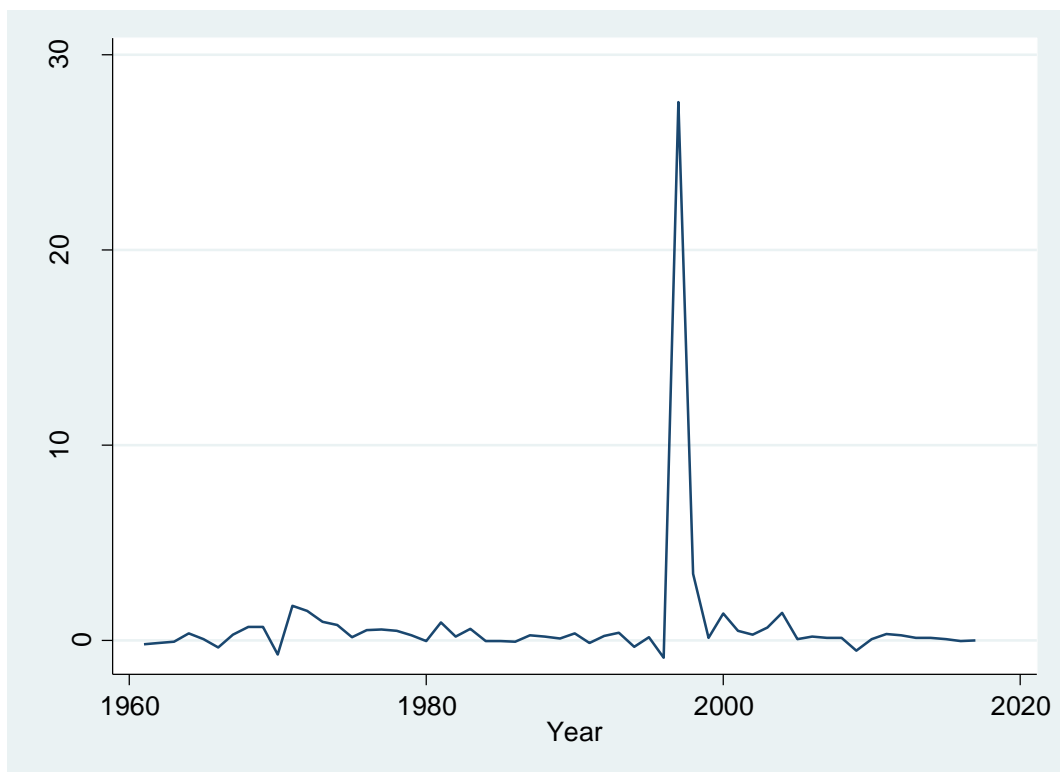
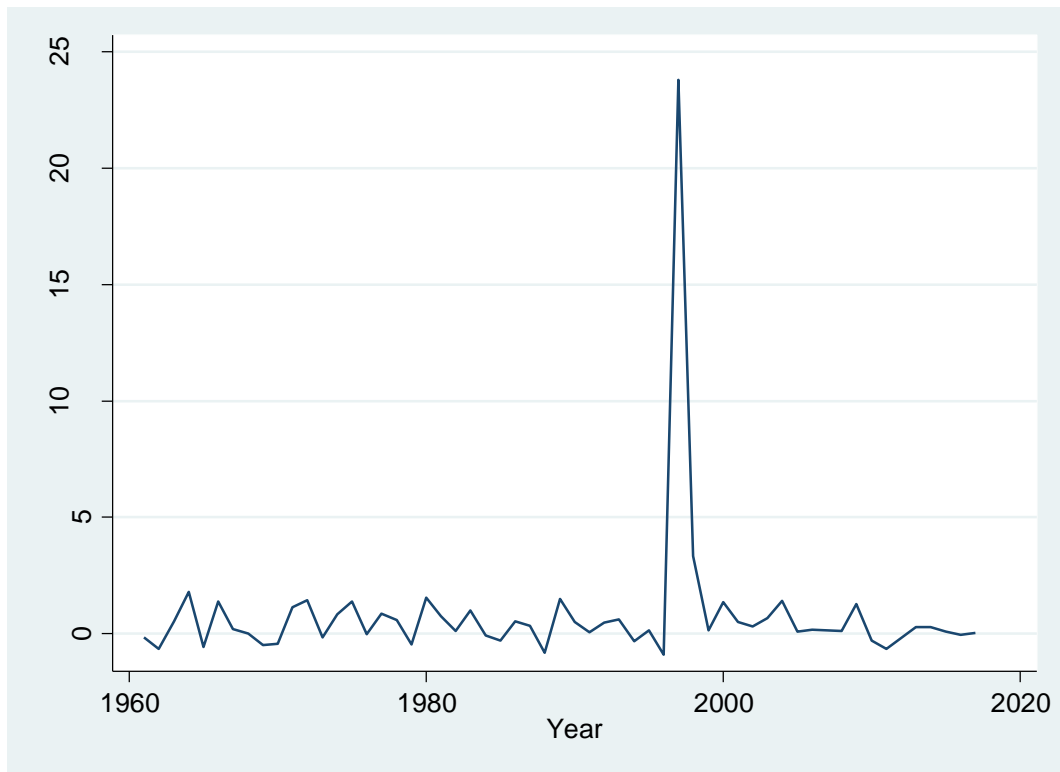


## Appendix D (Continued)

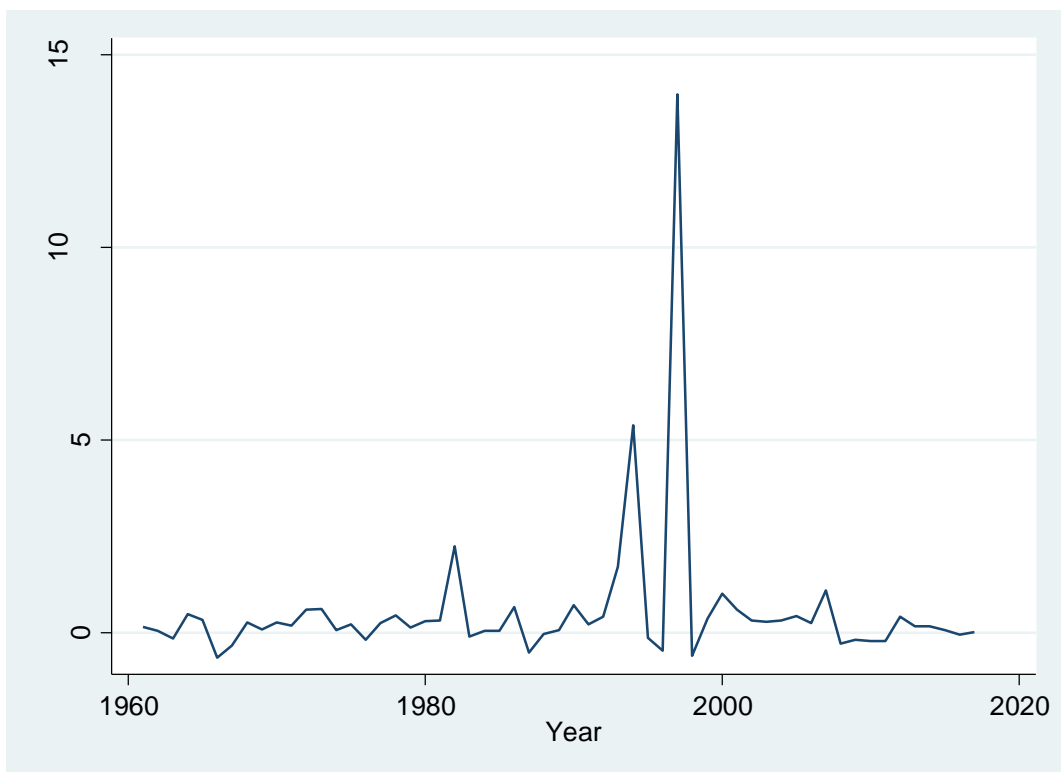
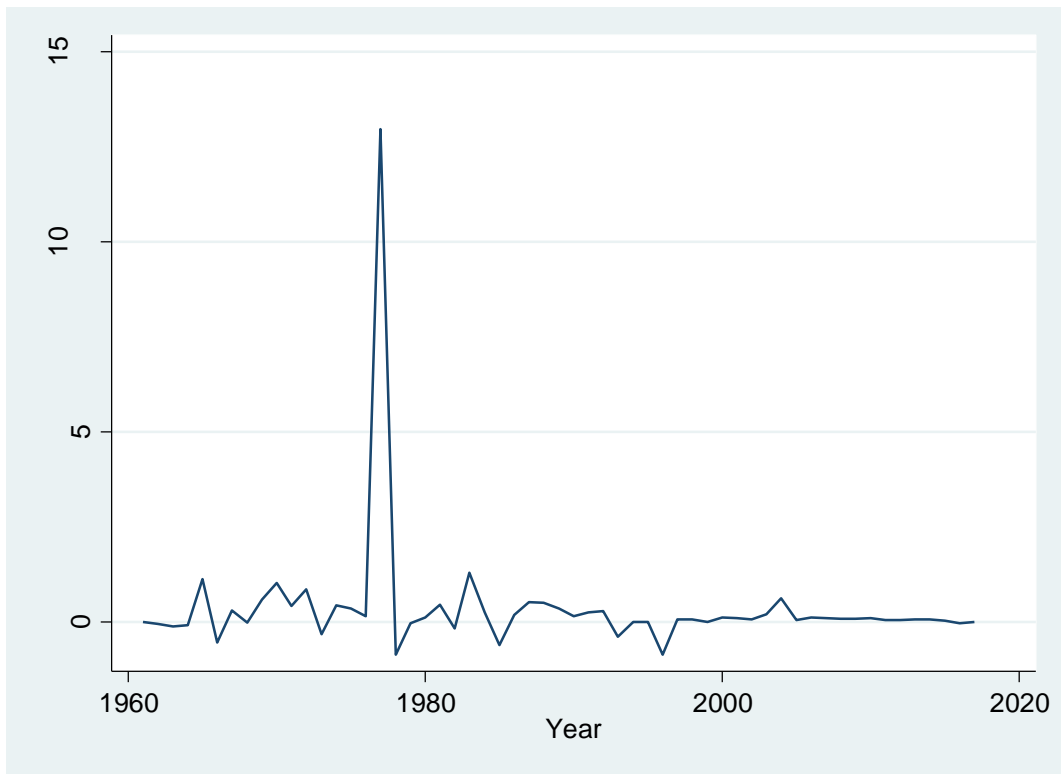




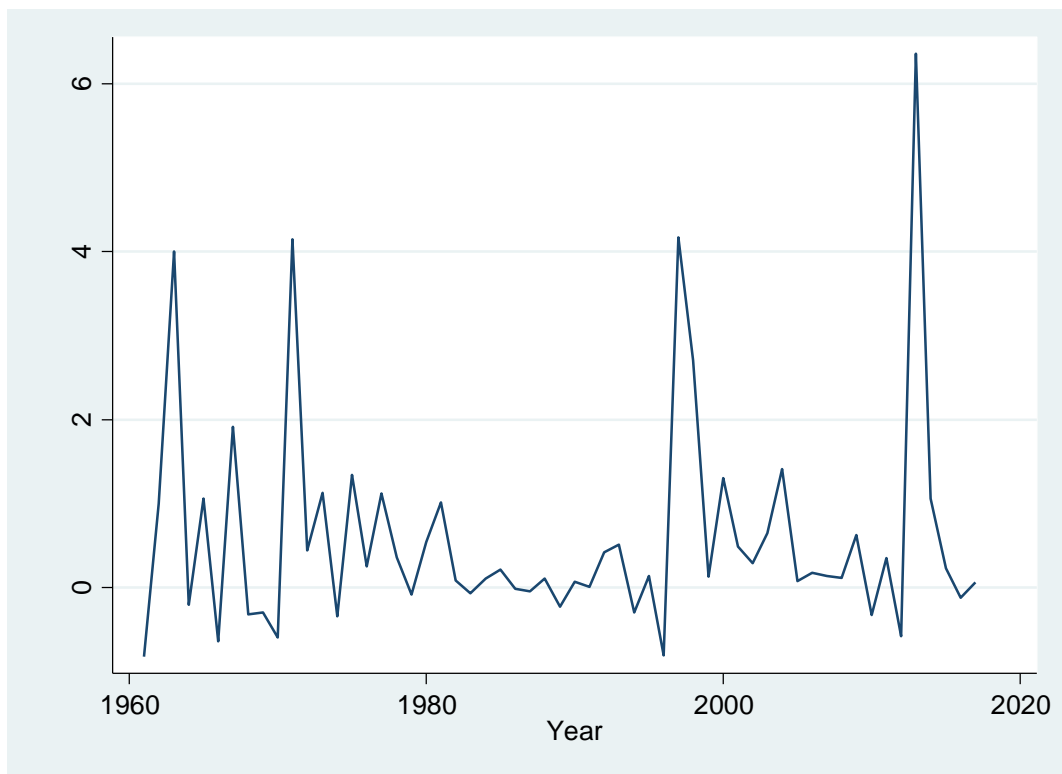
## Appendix D (Continued)



## Appendix D (Continued)



## Appendix D (Continued)



## Appendix E: ADF Unit Root Tests

. dfuller gY, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.765	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0033

D.gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gY						
L1.	-.7533591	.2001174	-3.76	0.000	-1.155307	-.3514116
LD.	.1099585	.1677553	0.66	0.515	-.2269879	.446905
L2D.	-.0508928	.1412497	-0.36	0.720	-.3346012	.2328157
_cons	.0297351	.013883	2.14	0.037	.0018503	.0576199

. dfuller gL, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.931	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0018

D.gL	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gL						
L1.	-.7233635	.1840189	-3.93	0.000	-1.092976	-.3537507
LD.	-.029475	.1740456	-0.17	0.866	-.3790558	.3201058
L2D.	.2227979	.1393889	1.60	0.116	-.057173	.5027688
_cons	-.0093768	.0065325	-1.44	0.157	-.0224976	.003744

. dfuller gK, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.357	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

D.gK	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gK						
L1.	-1.425113	.2660213	-5.36	0.000	-1.959433	-.890794
LD.	.3554386	.2001355	1.78	0.082	-.0465455	.7574227
L2D.	.1134666	.1404418	0.81	0.423	-.168619	.3955521
_cons	.1422135	.076821	1.85	0.070	-.0120861	.2965131

## Appendix E (continued)

. dfuller gH, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-4.030	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0013

D.gH	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gH					
L1.	-.7047867	.1748771	-4.03	0.000	-1.056038   - .3535357
LD.	.0900216	.1636356	0.55	0.585	-.2386502   .4186934
L2D.	.1807632	.1390162	1.30	0.199	-.0984592   .4599855
_cons	.0568364	.0382985	1.48	0.144	-.0200885   .1337613

. dfuller gPRO, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-3.311	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0144

D.gPRO	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gPRO					
L1.	-.5240274	.1582642	-3.31	0.002	-.8419105   -.2061443
LD.	.2106757	.149004	1.41	0.164	-.0886076   .5099589
L2D.	-.0610007	.1429307	-0.43	0.671	-.3480855   .2260841
_cons	.1314168	.0480451	2.74	0.009	.0349154   .2279183

. dfuller gGNC, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-4.265	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0005

D.gGNC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gGNC					
L1.	-1.149101	.2694348	-4.26	0.000	-1.690277   -.6079254
LD.	.0292366	.2131037	0.14	0.891	-.3987948   .4572679
L2D.	-.0222331	.1416829	-0.16	0.876	-.3068116   .2623454
_cons	.2812577	.1130167	2.49	0.016	.054257   .5082583

## Appendix E (continued)

. dfuller gSVC, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-4.003	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0014

D.gSVC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gSVC					
L1.	-.9361168	.233862	-4.00	0.000	-1.405842   - .4663912
LD.	.0241388	.191292	0.13	0.900	-.3600825   .4083602
L2D.	-.0165204	.1413512	-0.12	0.907	-.3004326   .2673918
_cons	.5971329	.3961935	1.51	0.138	-.1986452   1.392911

. dfuller gOTS, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-3.711	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0040

D.gOTS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gOTS					
L1.	-1.002477	.2701227	-3.71	0.001	-1.545035   -.4599198
LD.	-.1351937	.2116732	-0.64	0.526	-.5603519   .2899645
L2D.	-.1851703	.1389405	-1.33	0.189	-.4642405   .0938999
_cons	.6012129	.3254043	1.85	0.071	-.0523809   1.254807

. dfuller gAFF, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(t)	-4.299	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0004

D.gAFF	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gAFF					
L1.	-.9944266	.231311	-4.30	0.000	-1.459028   -.5298248
LD.	.0734422	.1943788	0.38	0.707	-.316979   .4638635
L2D.	.1201934	.1412363	0.85	0.399	-.163488   .4038749
_cons	.2733299	.087126	3.14	0.003	.0983321   .4483277

## Appendix E (continued)

. dfuller gMAN, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.209	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0006

D.gMAN	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gMAN						
L1.	-1.064549	.2529438	-4.21	0.000	-1.572601	-.5564963
LD.	.0244961	.2042609	0.12	0.905	-.385774	.4347663
L2D.	.0088983	.1415226	0.06	0.950	-.2753582	.2931547
_cons	1.022712	.7987941	1.28	0.206	-.581713	2.627137

. dfuller gMAQ, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.329	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0004

D.gMAQ	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gMAQ						
L1.	-1.144425	.2643907	-4.33	0.000	-1.675469	-.6133804
LD.	.0317711	.2116958	0.15	0.881	-.3934324	.4569746
L2D.	.0158514	.1414231	0.11	0.911	-.2682053	.2999081
_cons	.8272902	.3876073	2.13	0.038	.0487581	1.605822

. dfuller gREC, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.359	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0124

D.gREC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gREC						
L1.	-.7017245	.2089097	-3.36	0.002	-1.121332	-.2821172
LD.	-.0498161	.1772093	-0.28	0.780	-.4057514	.3061192
L2D.	-.1243318	.1402342	-0.89	0.380	-.4060004	.1573369
_cons	.2288299	.104954	2.18	0.034	.0180236	.4396361

## Appendix E (continued)

. dfuller gBDS, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.380	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0116

D.gBDS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gBDS						
L1.	-.7125027	.210778	-3.38	0.001	-1.135863	-.2891426
LD.	-.2300866	.190311	-1.21	0.232	-.6123375	.1521643
L2D.	.0044498	.140608	0.03	0.975	-.2779695	.2868692
_cons	.1534494	.3456043	0.44	0.659	-.5407172	.8476161

. dfuller gDMT, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.745	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0001

D.gDMT	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gDMT						
L1.	-1.202462	.2534023	-4.75	0.000	-1.711435	-.6934884
LD.	.1213725	.2084106	0.58	0.563	-.2972325	.5399775
L2D.	.1720969	.1391504	1.24	0.222	-.107395	.4515888
_cons	.2100534	.065825	3.19	0.002	.0778399	.3422668

. dfuller gEXP, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.006	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0014

D.gEXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gEXP						
L1.	-.939723	.2346077	-4.01	0.000	-1.410946	-.4684996
LD.	.0263133	.1914629	0.14	0.891	-.3582512	.4108778
L2D.	-.021064	.1414194	-0.15	0.882	-.3051131	.2629852
_cons	-.1454317	.3833142	-0.38	0.706	-.9153408	.6244775



## Appendix E (continued)

. dfuller gIMP, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.384	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0003

D.gIMP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gIMP						
L1.	-1.125528	.2567272	-4.38	0.000	-1.64118	-.6098763
LD.	.0829281	.2039243	0.41	0.686	-.3266661	.4925222
L2D.	.0145952	.1413687	0.10	0.918	-.2693522	.2985426
_cons	.4411035	.1867691	2.36	0.022	.0659666	.8162403

. dfuller gPUT, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.532	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

D.gPUT	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gPUT						
L1.	-1.341071	.242407	-5.53	0.000	-1.82796	-.8541823
LD.	.2361585	.1918426	1.23	0.224	-.1491688	.6214858
L2D.	.2061071	.1287948	1.60	0.116	-.052585	.4647991
_cons	.783592	.2327202	3.37	0.001	.3161598	1.251024

. dfuller gTRC, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.001	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0014

D.gTRC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gTRC						
L1.	-.9356154	.2338341	-4.00	0.000	-1.405285	-.4659457
LD.	.0223592	.1915154	0.12	0.908	-.3623108	.4070291
L2D.	-.0151596	.1414065	-0.11	0.915	-.2991829	.2688637
_cons	.609139	.4151298	1.47	0.149	-.2246738	1.442952

## Appendix E (continued)

. dfuller gCFI, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.139	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0008

D.gCFI	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gCFI						
L1.	-1.000325	.2416581	-4.14	0.000	-1.485709	-.5149402
LD.	.0441664	.1952893	0.23	0.822	-.3480837	.4364165
L2D.	-.0046893	.1412635	-0.03	0.974	-.2884253	.2790467
_cons	.8438711	.5015406	1.68	0.099	-.1635029	1.851245

. dfuller gGOV, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.105	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0009

D.gGOV	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gGOV						
L1.	-.9818363	.2391596	-4.11	0.000	-1.462203	-.50147
LD.	.0336542	.1947069	0.17	0.863	-.3574261	.4247345
L2D.	-.0010169	.1413519	-0.01	0.994	-.2849306	.2828968
_cons	.8436225	.5644772	1.49	0.141	-.2901634	1.977408

. dfuller gPPF, regress lags(2)

Augmented Dickey-Fuller test for unit root                      Number of obs    =            54

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.272	-3.574	-2.927	-2.598

MacKinnon approximate p-value for Z(t) = 0.0005

D.gPPF	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gPPF						
L1.	-1.119514	.2620646	-4.27	0.000	-1.645886	-.5931416
LD.	.0228129	.2097127	0.11	0.914	-.3984074	.4440331
L2D.	.0006766	.141349	0.00	0.996	-.2832312	.2845845
_cons	.4370014	.269617	1.62	0.111	-.1045404	.9785431

## Appendix E (continued)

. dfuller gMIS, regress lags(2)

Augmented Dickey-Fuller test for unit root      Number of obs    =      54

Test Statistic	----- Interpolated Dickey-Fuller -----		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.144	-3.574	-2.927

MacKinnon approximate p-value for Z(t) = 0.0234

D.gMIS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gMIS						
L1.	-.7929418	.2521823	-3.14	0.003	-1.299465	-.2864187
LD.	-.2867893	.1989539	-1.44	0.156	-.6863999	.1128214
L2D.	-.3228457	.1338387	-2.41	0.020	-.5916687	-.0540228
_cons	.4658002	.3072124	1.52	0.136	-.1512541	1.082855

## Appendix F: PP Unit Root Tests

. pperron gY, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-37.400	-19.008	-13.348	-10.736
Z(t)	-5.316	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gY					
	L1.	.3047109	.1295278	2.35	0.022	.0450233 .5643985
	_cons	.0282627	.0118692	2.38	0.021	.0044664 .052059

. pperron gL, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-44.019	-19.008	-13.348	-10.736
Z(t)	-5.733	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gL	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gL					
	L1.	.2559564	.1314462	1.95	0.057	-.0075774 .5194903
	_cons	-.0103691	.0062078	-1.67	0.101	-.022815 .0020768

. pperron gK, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-49.417	-19.008	-13.348	-10.736
Z(t)	-7.736	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gK	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gK					
	L1.	-.0326466	.1359909	-0.24	0.811	-.3052919 .2399988
	_cons	.0981728	.0719087	1.37	0.178	-.0459954 .242341

## Appendix F (continued)

. pperron gH, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-34.636	-19.008	-13.348	-10.736
Z(t)	-4.890	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

gH	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gH					
L1.	.3895587	.1253159	3.11	0.003	.1383155 .6408018
_cons	.0509077	.0354788	1.43	0.157	-.020223 .1220385

. pperron gPRO, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-25.721	-19.008	-13.348	-10.736
Z(t)	-3.940	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0018

gPRO	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gPRO					
L1.	.5463069	.1157169	4.72	0.000	.3143084 .7783053
_cons	.112371	.0382927	2.93	0.005	.0355988 .1891433

. pperron gGNC, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-60.833	-19.008	-13.348	-10.736
Z(t)	-8.254	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

gGNC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gGNC					
L1.	-.1126428	.1352047	-0.83	0.408	-.383712 .1584264
_cons	.2665429	.092327	2.89	0.006	.0814384 .4516475

## Appendix F (continued)

. pperron gSVC, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-50.292	-19.008	-13.348	-10.736
Z(t)	-6.731	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gSVC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gSVC						
L1.		.086257	.1355354	0.64	0.527	-.1854752 .3579892
_cons		.5640315	.357118	1.58	0.120	-.151947 1.28001

. pperron gOTS, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-64.577	-19.008	-13.348	-10.736
Z(t)	-8.425	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gOTS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gOTS						
L1.		-.1377386	.134809	-1.02	0.311	-.4080143 .1325371
_cons		.6561339	.2839721	2.31	0.025	.0868042 1.225464

. pperron gAFF, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-51.741	-19.008	-13.348	-10.736
Z(t)	-6.825	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gAFF	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gAFF						
L1.		.0708795	.1360716	0.52	0.605	-.2019276 .3436866
_cons		.2540568	.0668081	3.80	0.000	.1201146 .3879991

## Appendix F (continued)

. pperron gMAN, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-57.614	-19.008	-13.348	-10.736
Z(t)	-7.643	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gMAN	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gMAN						
L1.		-.0391765	.1360022	-0.29	0.774	-.3118444 .2334914
_cons		.9861342	.7292555	1.35	0.182	-.475935 2.448203

. pperron gMAQ, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-61.441	-19.008	-13.348	-10.736
Z(t)	-8.204	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gMAQ	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gMAQ						
L1.		-.1081058	.1352146	-0.80	0.427	-.3791947 .1629831
_cons		.7779833	.3324312	2.34	0.023	.1114989 1.444468

. pperron gREC, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-43.746	-19.008	-13.348	-10.736
Z(t)	-5.840	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gREC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
gREC						
L1.		.2267064	.1326924	1.71	0.093	-.039326 .4927387
_cons		.2458302	.08666	2.84	0.006	.0720874 .4195729

## Appendix F (continued)

. pperron gBDS, regress

Phillips-Perron test for unit root                      Number of obs =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-57.593	-19.008	-13.348	-10.736
Z(t)	-6.894	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

gBDS	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gBDS						
L1.	.077939	.1356535	0.57	0.568	-.1940299	.3499078
_cons	.2632608	.3348616	0.79	0.435	-.4080963	.9346179

. pperron gDMT, regress

Phillips-Perron test for unit root                      Number of obs =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-61.762	-19.008	-13.348	-10.736
Z(t)	-8.243	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

gDMT	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gDMT						
L1.	-.1108264	.1348674	-0.82	0.415	-.3812193	.1595664
_cons	.1966182	.0514446	3.82	0.000	.0934779	.2997585

. pperron gEXP, regress

Phillips-Perron test for unit root                      Number of obs =        56  
    Newey-West lags =        3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-50.469	-19.008	-13.348	-10.736
Z(t)	-6.758	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

gEXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
gEXP						
L1.	.0820396	.1356196	0.60	0.548	-.1898612	.3539405
_cons	-.1359862	.3616718	-0.38	0.708	-.8610945	.5891221



## Appendix F (continued)

. pperron gIMP, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-55.664	-19.008	-13.348	-10.736
Z(t)	-7.619	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gIMP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gIMP					
	L1.	-.0345766	.1360083	-0.25	0.800	-.3072567 .2381036
	_cons	.3905074	.1581033	2.47	0.017	.0735294 .7074853

. pperron gPUT, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-56.984	-19.008	-13.348	-10.736
Z(t)	-8.116	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gPUT	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gPUT					
	L1.	-.0817615	.1343933	-0.61	0.545	-.3512038 .1876809
	_cons	.6847824	.1966781	3.48	0.001	.2904665 1.079098

. pperron gTRC, regress

Phillips-Perron test for unit root                      Number of obs =        56  
Newey-West lags =    3

	Test Statistic	----- 1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	----- 10% Critical Value
Z(rho)	-50.451	-19.008	-13.348	-10.736
Z(t)	-6.740	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gTRC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	gTRC					
	L1.	.0848674	.1355825	0.63	0.534	-.1869593 .356694
	_cons	.5762659	.3751938	1.54	0.130	-.1759523 1.328484

## Appendix F (continued)

. pperron gCFI, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(rho)	-52.194	-19.008	-13.348	-10.736
Z(t)	-7.020	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gCFI	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
	gCFI						
	L1.	.0447401	.1359048	0.33	0.743	-.2277326	.3172128
	_cons	.7755492	.4479158	1.73	0.089	-.1224679	1.673566

. pperron gGOV, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(rho)	-52.116	-19.008	-13.348	-10.736
Z(t)	-6.967	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gGOV	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
	gGOV						
	L1.	.0523823	.1358617	0.39	0.701	-.2200039	.3247685
	_cons	.782235	.5103189	1.53	0.131	-.2408927	1.805363

. pperron gPPF, regress

Phillips-Perron test for unit root                      Number of obs    =        56  
Newey-West lags    =        3

	Test Statistic	----- Interpolated Dickey-Fuller -----		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(rho)	-60.411	-19.008	-13.348	-10.736
Z(t)	-8.070	-3.572	-2.925	-2.598

MacKinnon approximate p-value for Z(t) = 0.0000

	gPPF	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
	gPPF						
	L1.	-.0922465	.1355002	-0.68	0.499	-.363908	.179415
	_cons	.4082979	.2417425	1.69	0.097	-.0763667	.8929625

## Appendix F (continued)

```
. pperron gMIS, regress
```

```
Phillips-Perron test for unit root          Number of obs   =      56
                                             Newey-West lags =      3
```

```
----- Interpolated Dickey-Fuller -----
              Test              1% Critical   5% Critical   10% Critical
              Statistic         Value         Value         Value
-----
Z(rho)        -64.499          -19.008        -13.348        -10.736
Z(t)          -8.039           -3.572         -2.925         -2.598
-----
```

```
MacKinnon approximate p-value for Z(t) = 0.0000
```

```
-----
              gMIS |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
              gMIS |
              L1. |   -.0924696   .135537    -0.68   0.498    - .3642049   .1792656
              |
              _cons |   .6175675   .2807893    2.20   0.032    .0546189   1.180516
-----
```

## Appendix G: AIC Lag Selection

### Aggregated Sectors

```
. matrix list e(lags)

e(lags)[1,8]
      gY    gL    gK    gH    gPRO    gGNC    gSVC    gOTS
r1      1      0      0      0      0      0      0      1
```

### Disaggregated Sectors

#### Model 1

```
. matrix list e(lags)

e(lags)[1,8]
      gY    gL    gK    gH    gAFF    gMAN    gMAQ    gREC
r1      1      3      0      0      0      1      2      0
```

#### Model 2

```
. matrix list e(lags)

e(lags)[1,8]
      gY    gL    gK    gH    gBDS    gDMT    gEXP    gIMP
r1      3      2      0      0      3      0      0      0
```

#### Model 3

```
. matrix list e(lags)

e(lags)[1,7]
      gY    gL    gK    gH    gPUT    gTRC    gCFI
r1      1      4      0      0      0      0      0
```

#### Model 4

```
. matrix list e(lags)

e(lags)[1,7]
      gY    gL    gK    gH    gGOV    gPPF    gMIS
r1      1      3      0      0      0      4      0
```

## Appendix H: Bounds Testing Results for Aggregated Sectors

Pesaran/Shin/Smith (2001) ARDL Bounds Test  
H0: no levels relationship F = 4.917  
t = -5.650

Critical Values (0.1-0.01), F-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26

accept if F < critical value for I(0) regressors  
reject if F > critical value for I(1) regressors

Critical Values (0.1-0.01), t-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_7	-2.57	-4.23	-2.86	-4.57	-3.13	-4.85	-3.43	-5.19

accept if t > critical value for I(0) regressors  
reject if t < critical value for I(1) regressors

k: # of non-deterministic regressors in long-run relationship  
Critical values from Pesaran/Shin/Smith (2001)

## Appendix I: ECM Results for Aggregated Sectors

```
. ardl gY gL gK gH gPRO gGNC gSVC gOTS, lags (1 0 0 0 0 0 0 1) ec btest
```

ARDL(1,0,0,0,0,0,0,1) regression

Sample: 1962 - 2017

Number of obs = 56

R-squared = 0.4614

Adj R-squared = 0.3560

Log likelihood = 68.575457

Root MSE = 0.0785

	D.gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ADJ							
	gY						
	L1.	-.8158359	.1444064	-5.65	0.000	-1.106511	-.5251608
LR							
	gL	-.4606917	.3069781	-1.50	0.140	-1.078607	.1572232
	gK	-.0101933	.0253474	-0.40	0.689	-.061215	.0408284
	gH	.0815627	.0630132	1.29	0.202	-.0452763	.2084016
	gPRO	.1044029	.0673312	1.55	0.128	-.0311277	.2399335
	gGNC	.006494	.0213626	0.30	0.763	-.0365067	.0494946
	gSVC	.0070061	.0116427	0.60	0.550	-.0164294	.0304416
	gOTS						
	--.	-.0225742	.0206884	-1.09	0.281	-.0642177	.0190693
SR							
	gOTS						
	D1.	.0093106	.0066718	1.40	0.170	-.004119	.0227401
	_cons	.0075373	.0170094	0.44	0.660	-.0267008	.0417755

## Appendix J: Diagnostics Results for Aggregated Sectors

```
. jb resid
Jarque-Bera normality test:  4.233 Chi(2)  .1262
Jarque-Bera test for Ho: normality:
```

```
. estat dwatson
```

```
Durbin-Watson d-statistic( 10, 56) = 1.998882
```

```
. estat bgodfrey, lags(1)
```

```
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.000	1	0.9947
H0: no serial correlation			

```
. estat imtest, white
```

```
White's test for Ho: homoskedasticity
      against Ha: unrestricted heteroskedasticity
```

```
chi2(54)      =    55.77
Prob > chi2    =    0.4080
```

```
Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	55.77	54	0.4080
Skewness	12.47	9	0.1879
Kurtosis	1.89	1	0.1697
Total	70.13	64	0.2796

```
. estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
```

```
Ho: Constant variance
```

```
Variables: fitted values of gY
```

```
chi2(1)      =    0.51
Prob > chi2   =    0.4766
```

```
. estat ovtest
```

```
Ramsey RESET test using powers of the fitted values of gY
```

```
Ho: model has no omitted variables
```

```
F(3, 43) =    0.78
Prob > F =    0.5131
```

## Appendix K: Granger Causality Wald Tests for Aggregated Sectors

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gY	gL	5.7618	4	0.218
gY	gK	1.8531	4	0.763
gY	gH	2.3753	4	0.667
gY	gPRO	3.7739	4	0.437
gY	gGNC	1.0063	4	0.909
gY	gSVC	4.8558	4	0.302
gY	gOTS	5.5096	4	0.239
gY	ALL	24.788	28	0.639
gL	gY	21.632	4	0.000
gL	gK	14.154	4	0.007
gL	gH	9.493	4	0.050
gL	gPRO	34.538	4	0.000
gL	gGNC	17.291	4	0.002
gL	gSVC	16.826	4	0.002
gL	gOTS	13.673	4	0.008
gL	ALL	58.174	28	0.001
gK	gY	5.4879	4	0.241
gK	gL	10.003	4	0.040
gK	gH	20.642	4	0.000
gK	gPRO	8.3955	4	0.078
gK	gGNC	5.3587	4	0.252
gK	gSVC	30.435	4	0.000
gK	gOTS	40.421	4	0.000
gK	ALL	131	28	0.000



### Appendix K (Continued)

gH	gY	9.288	4	0.054
gH	gL	51.868	4	0.000
gH	gK	8.0279	4	0.091
gH	gPRO	18.983	4	0.001
gH	gGNC	14.632	4	0.006
gH	gSVC	59.419	4	0.000
gH	gOTS	33.51	4	0.000
gH	ALL	200.38	28	0.000
gPRO	gY	24.734	4	0.000
gPRO	gL	12.042	4	0.017
gPRO	gK	21.34	4	0.000
gPRO	gH	8.8906	4	0.064
gPRO	gGNC	20.075	4	0.000
gPRO	gSVC	9.2988	4	0.054
gPRO	gOTS	21.959	4	0.000
gPRO	ALL	101.85	28	0.000
gGNC	gY	.4545	4	0.978
gGNC	gL	.66727	4	0.955
gGNC	gK	2.2034	4	0.698
gGNC	gH	1.0075	4	0.909
gGNC	gPRO	6.7969	4	0.147
gGNC	gSVC	2.5981	4	0.627
gGNC	gOTS	3.3729	4	0.497
gGNC	ALL	16.667	28	0.955
gSVC	gY	5.6218	4	0.229
gSVC	gL	9.4181	4	0.051
gSVC	gK	7.1705	4	0.127
gSVC	gH	24.907	4	0.000
gSVC	gPRO	3.1169	4	0.538
gSVC	gGNC	2.6339	4	0.621
gSVC	gOTS	7.0165	4	0.135
gSVC	ALL	72.682	28	0.000
gOTS	gY	3.4728	4	0.482
gOTS	gL	5.7095	4	0.222
gOTS	gK	2.2756	4	0.685
gOTS	gH	23.72	4	0.000
gOTS	gPRO	8.2758	4	0.082
gOTS	gGNC	3.8644	4	0.425
gOTS	gSVC	5.4109	4	0.248
gOTS	ALL	72.758	28	0.000

## Appendix L: Bounds Test Results for Disaggregated Sectors

### Model 1

note: estat btest has been superseded by estat ectest  
as the prime procedure to test for a levels relationship.  
(click to run)

Pesaran/Shin/Smith (2001) ARDL Bounds Test  
H0: no levels relationship F = 6.845  
t = -6.304

Critical Values (0.1-0.01), F-statistic, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26

accept if F < critical value for I(0) regressors  
reject if F > critical value for I(1) regressors

Critical Values (0.1-0.01), t-statistic, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_7	-2.57	-4.23	-2.86	-4.57	-3.13	-4.85	-3.43	-5.19

accept if t > critical value for I(0) regressors  
reject if t < critical value for I(1) regressors

k: # of non-deterministic regressors in long-run relationship  
Critical values from Pesaran/Shin/Smith (2001)

### Model 2

Pesaran/Shin/Smith (2001) ARDL Bounds Test  
H0: no levels relationship F = 2.251  
t = -3.153

Critical Values (0.1-0.01), F-statistic, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_7	2.03	3.13	2.32	3.50	2.60	3.84	2.96	4.26

accept if F < critical value for I(0) regressors  
reject if F > critical value for I(1) regressors

Critical Values (0.1-0.01), t-statistic, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_7	-2.57	-4.23	-2.86	-4.57	-3.13	-4.85	-3.43	-5.19

accept if t > critical value for I(0) regressors  
reject if t < critical value for I(1) regressors

k: # of non-deterministic regressors in long-run relationship  
Critical values from Pesaran/Shin/Smith (2001)

## Appendix L (Continued)

### Model 3

Pesaran/Shin/Smith (2001) ARDL Bounds Test  
H0: no levels relationship F = 5.421  
t = -4.726

Critical Values (0.1-0.01), F-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_6	2.12	3.23	2.45	3.61	2.75	3.99	3.15	4.43
accept if F < critical value for I(0) regressors								
reject if F > critical value for I(1) regressors								

Critical Values (0.1-0.01), t-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_6	-2.57	-4.04	-2.86	-4.38	-3.13	-4.66	-3.43	-4.99
accept if t > critical value for I(0) regressors								
reject if t < critical value for I(1) regressors								

k: # of non-deterministic regressors in long-run relationship  
Critical values from Pesaran/Shin/Smith (2001)

### Model 4

Pesaran/Shin/Smith (2001) ARDL Bounds Test  
H0: no levels relationship F = 5.385  
t = -5.466

Critical Values (0.1-0.01), F-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_6	2.12	3.23	2.45	3.61	2.75	3.99	3.15	4.43
accept if F < critical value for I(0) regressors								
reject if F > critical value for I(1) regressors								

Critical Values (0.1-0.01), t-statistic, Case 3

	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]	[I_0]	[I_1]
	L_1	L_1	L_05	L_05	L_025	L_025	L_01	L_01
k_6	-2.57	-4.04	-2.86	-4.38	-3.13	-4.66	-3.43	-4.99
accept if t > critical value for I(0) regressors								
reject if t < critical value for I(1) regressors								

k: # of non-deterministic regressors in long-run relationship  
Critical values from Pesaran/Shin/Smith (2001)

Source: Author's Computation

## Appendix M: ECM Results for Disaggregated Sectors

### Model 1

Sample: 1964 - 2017

Number of obs = 54

R-squared = 0.6328

Adj R-squared = 0.5009

Log likelihood = 75.672994

Root MSE = 0.0701

	D.gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ADJ							
	gY						
	L1.	-.8825787	.1400141	-6.30	0.000	-1.165784	-.5993735
LR							
	gL	-.0797115	.4263617	-0.19	0.853	-.9421093	.7826864
	gK	-.0707941	.0305187	-2.32	0.026	-.132524	-.0090642
	gH	-.1179131	.0743977	-1.58	0.121	-.2683967	.0325705
	gAFF	.0153966	.0299375	0.51	0.610	-.0451578	.0759509
	gMAN	-.0045617	.01069	-0.43	0.672	-.0261843	.0170609
	gMAQ	.0208988	.0213342	0.98	0.333	-.0222537	.0640513
	gREC	.0687712	.0293221	2.35	0.024	.0094617	.1280807
SR							
	gL						
	D1.	-.7901427	.3436455	-2.30	0.027	-1.485231	-.0950539
	LD.	-1.030798	.3253665	-3.17	0.003	-1.688914	-.3726825
	L2D.	-.4375291	.2656266	-1.65	0.108	-.9748096	.0997513
	gMAN						
	D1.	.0167915	.0081738	2.05	0.047	.0002583	.0333246
	gMAQ						
	D1.	-.0135694	.0187349	-0.72	0.473	-.0514644	.0243256
	LD.	-.0273927	.016022	-1.71	0.095	-.0598003	.0050149
	_cons	.0164226	.0163065	1.01	0.320	-.0165604	.0494056

Source: Author's Computation

## Appendix M (Continued)

### Model 3

ARDL(1,4,0,0,0,0,0) regression

Sample: 1965 - 2017

Number of obs = 53

R-squared = 0.5715

Adj R-squared = 0.4566

Log likelihood = 69.751693

Root MSE = 0.0738

	D.gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ADJ							
	gY						
	L1.	-.7049832	.149169	-4.73	0.000	-1.006236	-.4037303
LR							
	gL	-.5371657	.6017979	-0.89	0.377	-1.752521	.6781899
	gK	-.0107326	.0290715	-0.37	0.714	-.0694437	.0479784
	gH	-.0064536	.0661911	-0.10	0.923	-.1401291	.127222
	gPUT	-.0018615	.0136106	-0.14	0.892	-.0293486	.0256256
	gTRC	.0753887	.0363343	2.07	0.044	.0020101	.1487673
	gCFI	-.0630187	.0305391	-2.06	0.045	-.1246937	-.0013438
SR							
	gL						
	D1.	.0800203	.398516	0.20	0.842	-.7247991	.8848398
	LD.	-.3898911	.3612037	-1.08	0.287	-1.119357	.3395745
	L2D.	.0792151	.340458	0.23	0.817	-.6083538	.7667841
	L3D.	.4406229	.2725888	1.62	0.114	-.1098814	.9911272
	_cons	.027252	.0136071	2.00	0.052	-.000228	.0547321

Source: Author's Computation (2018)

## Appendix M (Continued)

### Model 4

ARDL(1,3,0,0,0,4,0) regression

Sample: 1965 - 2017

Number of obs = 53

R-squared = 0.5682

Adj R-squared = 0.4091

Log likelihood = 69.547801

Root MSE = 0.0769

	D.gY	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ADJ							
	gY						
	L1.	-.8193037	.1498948	-5.47	0.000	-1.12275	-.5158575
LR							
	gL	.0134959	.4960518	0.03	0.978	-.9907084	1.0177
	gK	.0482546	.0341233	1.41	0.165	-.0208244	.1173335
	gH	.0213121	.0583556	0.37	0.717	-.0968227	.1394469
	gGOV	.0052979	.0080552	0.66	0.515	-.011009	.0216049
	gPPF	-.0301844	.0206163	-1.46	0.151	-.07192	.0115511
	gMIS	-.012989	.014475	-0.90	0.375	-.0422921	.0163141
SR							
	gL						
	D1.	-.5573583	.3603834	-1.55	0.130	-1.286916	.1721996
	LD.	-.7802052	.3341574	-2.33	0.025	-1.456672	-.1037389
	L2D.	-.4495856	.2684224	-1.67	0.102	-.9929784	.0938072
	gPPF						
	D1.	.0241525	.0142464	1.70	0.098	-.0046877	.0529928
	LD.	.0161569	.0122576	1.32	0.195	-.0086573	.040971
	L2D.	.0204844	.010351	1.98	0.055	-.00047	.0414389
	L3D.	.0193795	.0079055	2.45	0.019	.0033756	.0353833
	_cons	.0400332	.0150485	2.66	0.011	.009569	.0704973

Source: Author's Computation (2018)

## Appendix N: VAR Results for Disaggregated Model 2

### Lag Selection

varsoc gY gL gK gH gBDS gDMT gEXP gIMP

Selection-order criteria

Sample: 1965 - 2017

Number of obs

=

53

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-238.228				1.5e-06*	9.29162	9.40598*	9.58902*
1	-215.169	46.117	64	0.955	7.2e-06	10.8366	11.8659	13.5132
2	-186.123	58.092	64	0.684	.000032	12.1556*	14.0998	17.2114
3	-133.541	105.16	64	0.001	.000077	12.5865	15.4456	20.0215
4	-64.3732	138.34*	64	0.000	.000183	12.3914	16.1655	22.2057

Endogenous: gY gL gK gH gBDS gDMT gEXP gIMP

Exogenous: \_cons

## Appendix N (Continued)

. var gY gL gK gH gBDS gDMT gEXP gIMP, lags(1/2)

Vector autoregression

Sample: 1963 - 2017	No. of obs	=	55
Log likelihood = -185.6549	AIC	=	11.69654
FPE = .0000196	HQIC	=	13.616
Det(Sigma_ml) = 1.18e-07	SBIC	=	16.66013

Equation	Parms	RMSE	R-sq	chi2	P>chi2
gY	17	.087684	0.2270	16.15416	0.4423
gL	17	.046864	0.2699	20.32995	0.2057
gK	17	.590393	0.1250	7.856094	0.9530
gH	17	.241607	0.4590	46.656	0.0001
gBDS	17	2.70688	0.1670	11.0299	0.8076
gDMT	17	.391679	0.0779	4.643437	0.9973
gEXP	17	3.09324	0.0842	5.057126	0.9955
gIMP	17	1.24716	0.1252	7.872995	0.9526

		Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
gY	gY						
	L1.	.3027392	.1431406	2.11	0.034	.0221888	.5832896
	L2.	-.0712671	.1516056	-0.47	0.638	-.3684086	.2258745
gL	gL						
	L1.	-.3615942	.2599517	-1.39	0.164	-.8710901	.1479018
	L2.	.2224806	.2530764	0.88	0.379	-.27354	.7185012
gK	gK						
	L1.	-.0011007	.019492	-0.06	0.955	-.0393042	.0371029
	L2.	.0049682	.0203814	0.24	0.807	-.0349785	.044915
gH	gH						
	L1.	.0058127	.0524741	0.11	0.912	-.0970346	.10866
	L2.	-.07349	.0497914	-1.48	0.140	-.1710793	.0240992
gBDS	gBDS						
	L1.	-.0037387	.0049722	-0.75	0.452	-.013484	.0060066
	L2.	-.0064595	.0050395	-1.28	0.200	-.0163368	.0034178
gDMT	gDMT						
	L1.	-.0065324	.0317939	-0.21	0.837	-.0688472	.0557824
	L2.	-.0213912	.0319699	-0.67	0.503	-.084051	.0412686
gEXP	gEXP						
	L1.	.0011639	.0038304	0.30	0.761	-.0063435	.0086713
	L2.	.0030224	.0037952	0.80	0.426	-.004416	.0104609
gIMP	gIMP						
	L1.	-.001349	.0093864	-0.14	0.886	-.0197461	.017048
	L2.	.0009846	.0091818	0.11	0.915	-.0170114	.0189806
_cons		.0433774	.0158499	2.74	0.006	.0123121	.0744426

Source: Author's Computation



## Appendix O: Diagnostic Tests for Disaggregated Sectors

### Model 1

```
. jb resid
Jarque-Bera normality test:   3.45 Chi(2)   .1782
Jarque-Bera test for Ho: normality:
```

```
. estat dwatson
```

```
Durbin-Watson d-statistic( 15,   54) =  1.881684
```

```
. estat bgodfrey, lags(1)
```

```
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	1.750	1	0.1858

H0: no serial correlation

```
. estat imtest, white
```

```
White's test for Ho: homoskedasticity
      against Ha: unrestricted heteroskedasticity
```

```
chi2(54)      =    54.00
Prob > chi2    =    0.4744
```

```
Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	54.00	54	0.4744
Skewness	13.76	14	0.4675
Kurtosis	1.30	1	0.2544
Total	69.06	69	0.4753

```
. estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of gY
```

```
chi2(1)      =    1.72
Prob > chi2   =    0.1898
```

```
. estat ovtest
```

```
Ramsey RESET test using powers of the fitted values of gY
Ho: model has no omitted variables
F(3, 36) =    0.58
Prob > F =    0.6346
```

## Appendix O (Continued)

### Model 2

```
. jb resid
Jarque-Bera normality test:  2.134 Chi(2)   .344
Jarque-Bera test for Ho: normality:
```

```
. estat dwatson
```

```
Durbin-Watson d-statistic( 16,   54) =  2.097052
```

```
. estat bgodfrey, lags(1)
```

```
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.534	1	0.4647

H0: no serial correlation

```
. estat imtest, white
```

```
White's test for Ho: homoskedasticity
      against Ha: unrestricted heteroskedasticity
```

```
chi2(53)      =    54.00
Prob > chi2    =    0.4360
```

```
Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	54.00	53	0.4360
Skewness	19.47	15	0.1933
Kurtosis	1.16	1	0.2823
Total	74.62	69	0.3006

```
. estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
```

```
Ho: Constant variance
```

```
Variables: fitted values of gY
```

```
chi2(1)      =    1.97
Prob > chi2   =    0.1600
```

```
. estat ovtest
```

```
Ramsey RESET test using powers of the fitted values of gY
```

```
Ho: model has no omitted variables
```

```
F(3, 35) =    0.15
```

```
Prob > F =    0.9300
```

## Appendix O (Continued)

### Model 3

```
. jb resid
Jarque-Bera normality test:  2.784 Chi(2)  .462
Jarque-Bera test for Ho: normality:
```

```
. estat dwatson
```

```
Durbin-Watson d-statistic( 12, 53) = 1.959514
```

```
. estat bgodfrey, lags(1)
```

```
Breusch-Godfrey LM test for autocorrelation
```

lags(p)	chi2	df	Prob > chi2
1	0.097	1	0.7553

H0: no serial correlation

```
. estat imtest, white
```

```
White's test for Ho: homoskedasticity
against Ha: unrestricted heteroskedasticity
```

```
chi2(52) = 53.00
Prob > chi2 = 0.4354
```

```
Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	53.00	52	0.4354
Skewness	11.06	11	0.4382
Kurtosis	1.15	1	0.2832
Total	65.21	64	0.4343

```
. estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of gY
```

```
chi2(1) = 0.27
Prob > chi2 = 0.6011
```

```
. estat ovtest
```

```
Ramsey RESET test using powers of the fitted values of gY
Ho: model has no omitted variables
F(3, 38) = 0.40
Prob > F = 0.7539
```

## Appendix O (Continued)

### Model 4

```
. jb resid
Jarque-Bera normality test:  3.247 Chi(2)  .589
Jarque-Bera test for Ho: normality:

. estat dwatson

Durbin-Watson d-statistic( 15, 53) = 1.954967

. estat bgodfrey, lags(1)

Breusch-Godfrey LM test for autocorrelation
-----+-----
lags(p) |          chi2          df          Prob > chi2
-----+-----
1       |          0.142           1          0.7058
-----+-----
H0: no serial correlation

. estat imtest, white

White's test for Ho: homoskedasticity
      against Ha: unrestricted heteroskedasticity

      chi2(52)      =      53.00
      Prob > chi2    =      0.4354

Cameron & Trivedi's decomposition of IM-test
-----+-----
Source |          chi2          df          p
-----+-----
Heteroskedasticity |          53.00          52          0.4354
Skewness |           9.22          14          0.8169
Kurtosis |           1.31           1          0.2530
-----+-----
Total |          63.52          67          0.5979
-----+-----

. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
      Ho: Constant variance
      Variables: fitted values of gY

      chi2(1)      =      0.73
      Prob > chi2   =      0.3940

. estat ovtest

Ramsey RESET test using powers of the fitted values of gY
      Ho: model has no omitted variables
      F(3, 35) =      1.46
      Prob > F =      0.2417
```

**Source: Author's Computation**

## Appendix P: Granger Causality Wald Tests for Disaggregated Sectors

### Model 1

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gY	gL	9.0569	4	0.060
gY	gK	2.9716	4	0.563
gY	gH	7.0039	4	0.136
gY	gAFF	10.685	4	0.030
gY	gMAN	9.8034	4	0.044
gY	gMAQ	6.1906	4	0.185
gY	gREC	5.9642	4	0.202
gY	ALL	47.308	28	0.013
gL	gY	37.585	4	0.000
gL	gK	21.476	4	0.000
gL	gH	12.037	4	0.017
gL	gAFF	7.3694	4	0.118
gL	gMAN	35.608	4	0.000
gL	gMAQ	28.266	4	0.000
gL	gREC	26.4	4	0.000
gL	ALL	82.951	28	0.000
gK	gY	14.302	4	0.006
gK	gL	3.2409	4	0.518
gK	gH	8.1759	4	0.085
gK	gAFF	10.111	4	0.039
gK	gMAN	6.1601	4	0.188
gK	gMAQ	16.229	4	0.003
gK	gREC	5.6955	4	0.223
gK	ALL	89.96	28	0.000
gH	gY	8.6128	4	0.072
gH	gL	23.697	4	0.000
gH	gK	2.8494	4	0.583
gH	gAFF	6.0295	4	0.197
gH	gMAN	60.199	4	0.000
gH	gMAQ	74.603	4	0.000
gH	gREC	13.898	4	0.008
gH	ALL	243.48	28	0.000
gAFF	gY	29.729	4	0.000
gAFF	gL	22.351	4	0.000
gAFF	gK	4.9868	4	0.289
gAFF	gH	4.4555	4	0.348
gAFF	gMAN	9.1938	4	0.056
gAFF	gMAQ	4.6657	4	0.323
gAFF	gREC	4.1224	4	0.390
gAFF	ALL	82.181	28	0.000

## Appendix P (Continued)

### Model 1

gMAN	gY	.27067	4	0.992
gMAN	gL	4.7991	4	0.309
gMAN	gK	1.5377	4	0.820
gMAN	gH	2.2598	4	0.688
gMAN	gAFF	3.1053	4	0.540
gMAN	gMAQ	277.08	4	0.000
gMAN	gREC	4.3982	4	0.355
gMAN	ALL	546.22	28	0.000
gMAQ	gY	5.2261	4	0.265
gMAQ	gL	2.1116	4	0.715
gMAQ	gK	2.5688	4	0.632
gMAQ	gH	2.1793	4	0.703
gMAQ	gAFF	7.7379	4	0.102
gMAQ	gMAN	1.1081	4	0.893
gMAQ	gREC	3.2002	4	0.525
gMAQ	ALL	38.636	28	0.087
gREC	gY	4.3385	4	0.362
gREC	gL	8.6568	4	0.070
gREC	gK	7.233	4	0.124
gREC	gH	16.328	4	0.003
gREC	gAFF	11.223	4	0.024
gREC	gMAN	34.351	4	0.000
gREC	gMAQ	53.19	4	0.000
gREC	ALL	259.07	28	0.000

## Appendix P (Continued)

### Model 2

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gY	gL	2.6113	2	0.271
gY	gK	.06493	2	0.968
gY	gH	2.5411	2	0.281
gY	gBDS	2.5835	2	0.275
gY	gDMT	.46678	2	0.792
gY	gEXP	.73966	2	0.691
gY	gIMP	.0344	2	0.983
gY	ALL	8.1068	14	0.884
gL	gY	4.4487	2	0.108
gL	gK	1.2875	2	0.525
gL	gH	1.6754	2	0.433
gL	gBDS	.53253	2	0.766
gL	gDMT	.60474	2	0.739
gL	gEXP	3.1902	2	0.203
gL	gIMP	.22223	2	0.895
gL	ALL	12.595	14	0.559
gK	gY	.22926	2	0.892
gK	gL	.41767	2	0.812
gK	gH	1.9415	2	0.379
gK	gBDS	.73002	2	0.694
gK	gDMT	.14955	2	0.928
gK	gEXP	.10072	2	0.951
gK	gIMP	.8076	2	0.668
gK	ALL	4.2925	14	0.993

# Appendix P (Continued)

gH	gY	.39554	2	0.821
gH	gL	8.1426	2	0.017
gH	gK	5.9321	2	0.052
gH	gBDS	.53576	2	0.765
gH	gDMT	10.307	2	0.006
gH	gEXP	.50409	2	0.777
gH	gIMP	.43318	2	0.805
gH	ALL	31.167	14	0.005
gBDS	gY	.13702	2	0.934
gBDS	gL	1.6031	2	0.449
gBDS	gK	.75564	2	0.685
gBDS	gH	3.0552	2	0.217
gBDS	gDMT	.09353	2	0.954
gBDS	gEXP	.23259	2	0.890
gBDS	gIMP	.55214	2	0.759
gBDS	ALL	7.0344	14	0.933
gDMT	gY	.82993	2	0.660
gDMT	gL	.81086	2	0.667
gDMT	gK	.84206	2	0.656
gDMT	gH	.47027	2	0.790
gDMT	gBDS	1.0198	2	0.601
gDMT	gEXP	.02577	2	0.987
gDMT	gIMP	.30471	2	0.859
gDMT	ALL	3.7164	14	0.997
gEXP	gY	.10982	2	0.947
gEXP	gL	1.881	2	0.390
gEXP	gK	.13151	2	0.936
gEXP	gH	.47462	2	0.789
gEXP	gBDS	.61309	2	0.736
gEXP	gDMT	1.0449	2	0.593
gEXP	gIMP	.05686	2	0.972
gEXP	ALL	4.5301	14	0.991
gIMP	gY	1.6797	2	0.432
gIMP	gL	.67002	2	0.715
gIMP	gK	1.6113	2	0.447
gIMP	gH	.88451	2	0.643
gIMP	gBDS	.40574	2	0.816
gIMP	gDMT	3.1844	2	0.203
gIMP	gEXP	.24741	2	0.884
gIMP	ALL	7.5238	14	0.913



## Appendix P (Continued)

### Model 3

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gY	gL	8.4786	4	0.076
gY	gK	1.6651	4	0.797
gY	gH	2.081	4	0.721
gY	gPUT	1.9745	4	0.740
gY	gTRC	14.284	4	0.006
gY	gCFI	13.111	4	0.011
gY	ALL	30.283	24	0.176
gL	gY	6.3067	4	0.177
gL	gK	2.1761	4	0.703
gL	gH	.6831	4	0.953
gL	gPUT	4.4504	4	0.348
gL	gTRC	3.6598	4	0.454
gL	gCFI	3.5227	4	0.474
gL	ALL	19.409	24	0.730
gK	gY	9.2296	4	0.056
gK	gL	15.114	4	0.004
gK	gH	20.309	4	0.000
gK	gPUT	15.456	4	0.004
gK	gTRC	10.095	4	0.039
gK	gCFI	8.8335	4	0.065
gK	ALL	65.93	24	0.000
gH	gY	6.286	4	0.179
gH	gL	22.9	4	0.000
gH	gK	6.3279	4	0.176
gH	gPUT	1.6904	4	0.792
gH	gTRC	8.7871	4	0.067
gH	gCFI	4.4319	4	0.351
gH	ALL	106.25	24	0.000

## Appendix P (Continued)

### Model 3

gPUT	gY	2.4682	4	0.650
gPUT	gL	8.8967	4	0.064
gPUT	gK	2.1955	4	0.700
gPUT	gH	10.559	4	0.032
gPUT	gTRC	11.926	4	0.018
gPUT	gCFI	12.211	4	0.016
gPUT	ALL	52.27	24	0.001
gTRC	gY	4.3332	4	0.363
gTRC	gL	15.535	4	0.004
gTRC	gK	5.7204	4	0.221
gTRC	gH	47.322	4	0.000
gTRC	gPUT	1.6146	4	0.806
gTRC	gCFI	7.4512	4	0.114
gTRC	ALL	58.115	24	0.000
gCFI	gY	4.1946	4	0.380
gCFI	gL	17.396	4	0.002
gCFI	gK	5.9507	4	0.203
gCFI	gH	45.341	4	0.000
gCFI	gPUT	2.1549	4	0.707
gCFI	gTRC	5.9825	4	0.200
gCFI	ALL	58.521	24	0.000

## Appendix P (Continued)

### Model 4

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
gY	gL	4.3104	4	0.366
gY	gK	2.4161	4	0.660
gY	gH	1.4319	4	0.839
gY	gGOV	2.5828	4	0.630
gY	gPPF	5.1816	4	0.269
gY	gMIS	2.7438	4	0.602
gY	ALL	22.663	24	0.540
gL	gY	3.555	4	0.470
gL	gK	2.8494	4	0.583
gL	gH	1.4914	4	0.828
gL	gGOV	1.1599	4	0.885
gL	gPPF	1.8684	4	0.760
gL	gMIS	2.8531	4	0.583
gL	ALL	14.185	24	0.942
gK	gY	14.873	4	0.005
gK	gL	10.624	4	0.031
gK	gH	15.369	4	0.004
gK	gGOV	12.885	4	0.012
gK	gPPF	56.493	4	0.000
gK	gMIS	11.083	4	0.026
gK	ALL	142.4	24	0.000
gH	gY	10.647	4	0.031
gH	gL	34.038	4	0.000
gH	gK	11.879	4	0.018
gH	gGOV	52.819	4	0.000
gH	gPPF	15.942	4	0.003
gH	gMIS	27.405	4	0.000
gH	ALL	187.91	24	0.000

## Appendix P (Continued)

### Model 4

gGOV	gY	6.8721	4	0.143
gGOV	gL	3.2018	4	0.525
gGOV	gK	40.928	4	0.000
gGOV	gH	2.2991	4	0.681
gGOV	gPPF	15.293	4	0.004
gGOV	gMIS	172.59	4	0.000
gGOV	ALL	396.66	24	0.000
gPPF	gY	12.343	4	0.015
gPPF	gL	1.3294	4	0.856
gPPF	gK	36.753	4	0.000
gPPF	gH	8.0826	4	0.089
gPPF	gGOV	8.2149	4	0.084
gPPF	gMIS	8.8177	4	0.066
gPPF	ALL	104.73	24	0.000
gMIS	gY	2.751	4	0.600
gMIS	gL	1.6996	4	0.791
gMIS	gK	12.905	4	0.012
gMIS	gH	12.372	4	0.015
gMIS	gGOV	36.605	4	0.000
gMIS	gPPF	2.4655	4	0.651
gMIS	ALL	167.62	24	0.000

## Appendix Q: Narayan's Critical Values for Bounds Test (Case III)

Critical values for the bounds test: case III: unrestricted intercept and no trend

1 per cent																
n	k = 0		k = 1		k = 2		k = 3		k = 4		k = 5		k = 6		k = 7	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
30	13.680	13.680	8.170	9.285	6.183	7.873	5.333	7.063	4.768	6.670	4.537	6.370	4.270	6.211	4.104	6.151
35	13.290	13.290	7.870	8.960	6.140	7.607	5.198	6.845	4.590	6.368	4.257	6.040	4.016	5.797	3.841	5.686
40	13.070	13.070	7.625	8.825	5.893	7.337	5.018	6.610	4.428	6.250	4.045	5.898	3.800	5.643	3.644	5.464
45	12.930	12.930	7.740	8.650	5.920	7.197	4.983	6.423	4.394	5.914	4.030	5.598	3.790	5.411	3.595	5.225
50	12.730	12.730	7.560	8.685	5.817	7.303	4.865	6.360	4.306	5.874	3.955	5.583	3.656	5.331	3.498	5.149
55	12.700	12.700	7.435	8.460	5.707	6.977	4.828	6.195	4.244	5.726	3.928	5.408	3.636	5.169	3.424	4.989
60	12.490	12.490	7.400	8.510	5.697	6.987	4.748	6.188	4.176	5.676	3.783	5.338	3.531	5.081	3.346	4.895
65	12.400	12.400	7.320	8.435	5.583	6.853	4.690	6.143	4.188	5.694	3.783	5.300	3.501	5.051	3.310	4.871
70	12.240	12.240	7.170	8.405	5.487	6.880	4.635	6.055	4.098	5.570	3.747	5.285	3.436	5.044	3.261	4.821
75	12.540	12.540	7.225	8.300	5.513	6.860	4.725	6.080	4.168	5.548	3.772	5.213	3.496	4.966	3.266	4.801
80	12.120	12.120	7.095	8.260	5.407	6.783	4.568	5.960	4.096	5.512	3.725	5.163	3.457	4.943	3.233	4.760
5 per cent																
30	8.770	8.770	5.395	6.350	4.267	5.473	3.710	5.018	3.354	4.774	3.125	4.608	2.970	4.499	2.875	4.445
35	8.640	8.640	5.290	6.175	4.183	5.333	3.615	4.913	3.276	4.630	3.037	4.443	2.864	4.324	2.753	4.209
40	8.570	8.570	5.260	6.160	4.133	5.260	3.548	4.803	3.202	4.544	2.962	4.338	2.797	4.211	2.676	4.130
45	8.590	8.590	5.235	6.135	4.083	5.207	3.535	4.733	3.178	4.450	2.922	4.268	2.764	4.123	2.643	4.004
50	8.510	8.510	5.220	6.070	4.070	5.190	3.500	4.700	3.136	4.416	2.900	4.218	2.726	4.057	2.593	3.941
55	8.390	8.390	5.125	6.045	3.987	5.090	3.408	4.623	3.068	4.334	2.848	4.160	2.676	3.999	2.556	3.904
60	8.460	8.460	5.125	6.000	4.000	5.057	3.415	4.615	3.062	4.314	2.817	4.097	2.643	3.939	2.513	3.823
65	8.490	8.490	5.130	5.980	4.010	5.080	3.435	4.583	3.068	4.274	2.835	4.090	2.647	3.921	2.525	3.808
70	8.370	8.370	5.055	5.915	3.947	5.020	3.370	4.545	3.022	4.256	2.788	4.073	2.629	3.906	2.494	3.786
75	8.420	8.420	5.140	5.920	3.983	5.060	3.408	4.550	3.042	4.244	2.802	4.065	2.637	3.900	2.503	3.768
80	8.400	8.400	5.060	5.930	3.940	5.043	3.363	4.515	3.010	4.216	2.787	4.015	2.627	3.864	2.476	3.746
10 per cent																
30	6.840	6.840	4.290	5.080	3.437	4.470	3.008	4.150	2.752	3.994	2.578	3.858	2.457	3.797	2.384	3.728
35	6.810	6.810	4.225	5.050	3.393	4.410	2.958	4.100	2.696	3.898	2.508	3.763	2.387	3.671	2.300	3.606
40	6.760	6.760	4.235	5.000	3.373	4.377	2.933	4.020	2.660	3.838	2.483	3.708	2.353	3.599	2.260	3.534
45	6.760	6.760	4.225	5.020	3.330	4.347	2.893	3.983	2.638	3.772	2.458	3.647	2.327	3.541	2.238	3.461
50	6.740	6.740	4.190	4.940	3.333	4.313	2.873	3.973	2.614	3.746	2.435	3.600	2.309	3.507	2.205	3.421
55	6.700	6.700	4.155	4.925	3.280	4.273	2.843	3.920	2.578	3.710	2.393	3.583	2.270	3.486	2.181	3.398
60	6.700	6.700	4.145	4.950	3.270	4.260	2.838	3.923	2.568	3.712	2.385	3.565	2.253	3.436	2.155	3.353
65	6.740	6.740	4.175	4.930	3.300	4.250	2.843	3.923	2.574	3.682	2.397	3.543	2.256	3.430	2.156	3.334
70	6.670	6.670	4.125	4.880	3.250	4.237	2.818	3.880	2.552	3.648	2.363	3.510	2.233	3.407	2.138	3.325
75	6.720	6.720	4.150	4.885	3.277	4.243	2.838	3.898	2.558	3.654	2.380	3.515	2.244	3.397	2.134	3.313
80	6.720	6.720	4.135	4.895	3.260	4.247	2.823	3.885	2.548	3.644	2.355	3.500	2.236	3.381	2.129	3.289

Source: Narayan (2005)

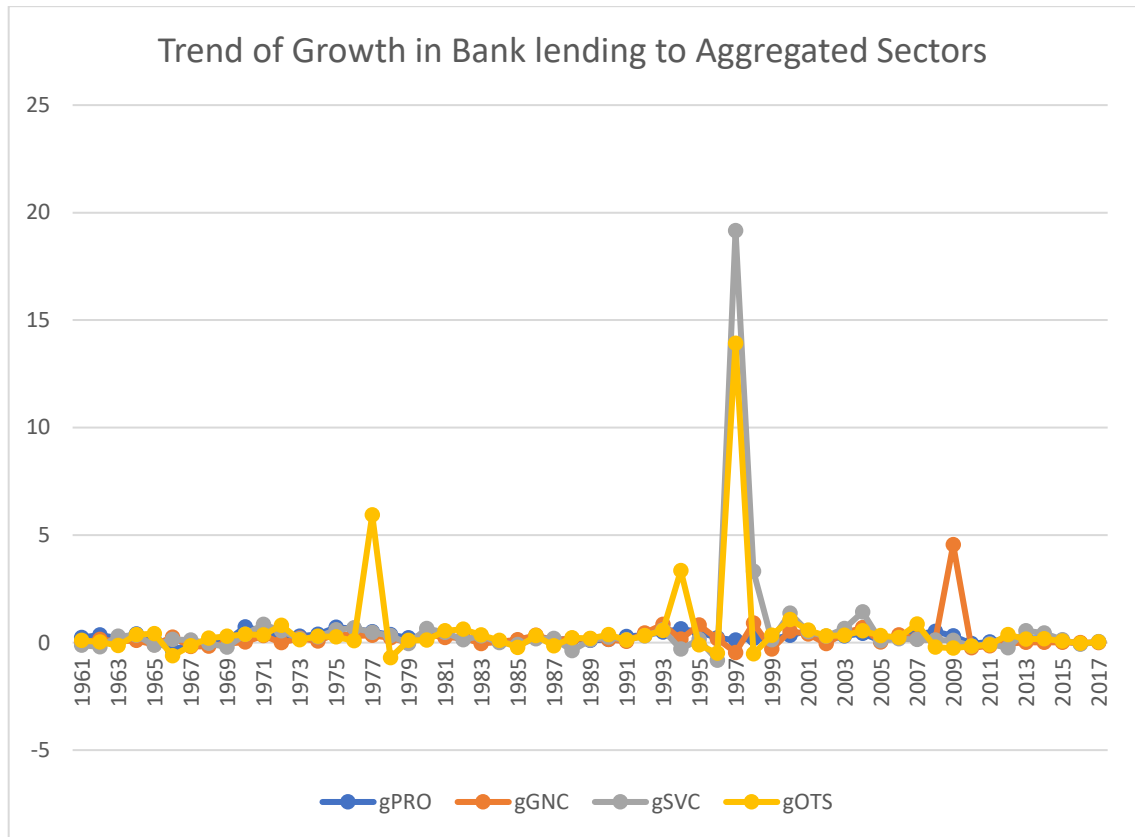
## Appendix R: Durbin-Watson Statistic Values at 5%

**TABLE III**  
**DURBIN-WATSON STATISTIC: 5 PER CENT SIGNIFICANCE POINTS OF  $dL$  AND  $dU^a$**

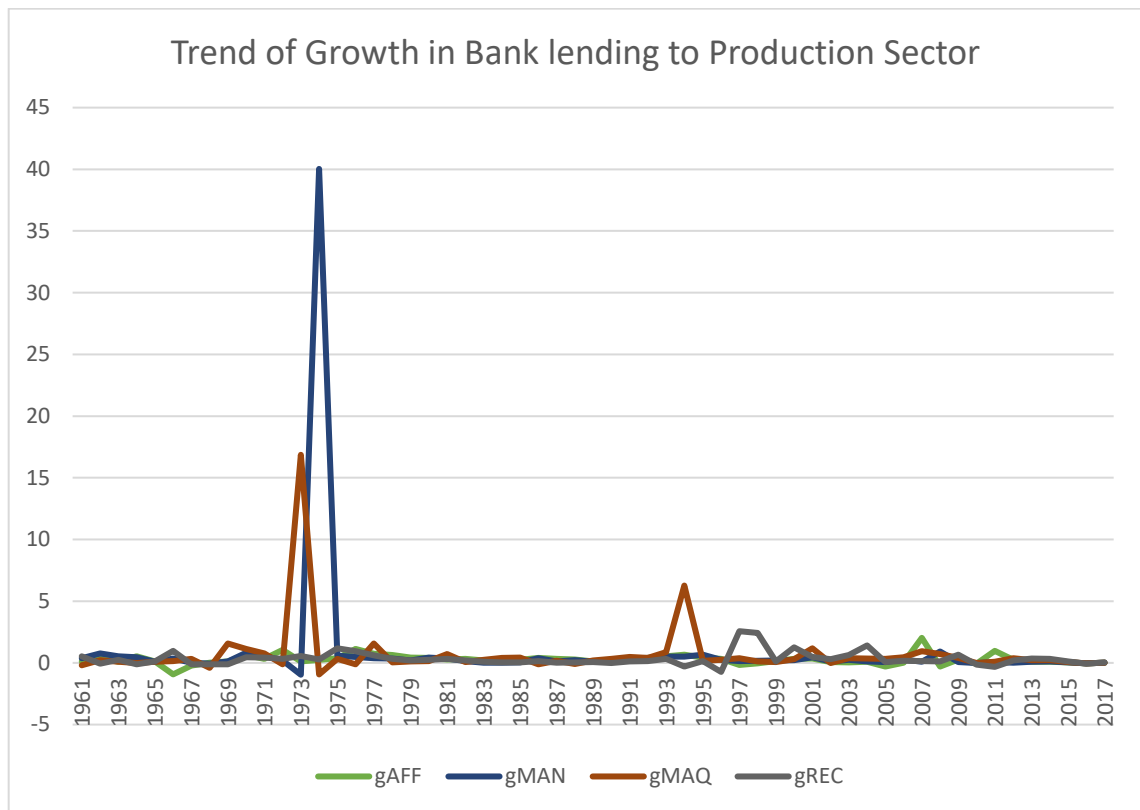
n	k*=1		k*=2		k*=3		k*=4		k*=5		k*=6		k*=7		k*=8		k*=9		k*=10	
	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU	dL	dU
6	0.610	1.400	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7	0.700	1.356	0.467	1.896	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	0.763	1.332	0.559	1.777	0.368	2.287	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
9	0.824	1.320	0.629	1.699	0.455	2.128	0.296	2.588	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
10	0.879	1.320	0.697	1.641	0.525	2.016	0.376	2.414	0.243	2.822	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
11	0.927	1.324	0.758	1.604	0.595	1.928	0.444	2.283	0.316	2.645	0.203	3.005	-----	-----	-----	-----	-----	-----	-----	-----
12	0.971	1.331	0.812	1.579	0.658	1.864	0.512	2.177	0.379	2.506	0.268	2.832	0.171	3.149	-----	-----	-----	-----	-----	-----
13	1.010	1.340	0.861	1.562	0.715	1.816	0.574	2.094	0.445	2.390	0.328	2.692	0.230	2.985	0.147	3.266	-----	-----	-----	-----
14	1.045	1.350	0.905	1.551	0.767	1.779	0.632	2.030	0.505	2.296	0.389	2.572	0.286	2.848	0.200	3.111	0.127	3.360	-----	-----
15	1.077	1.361	0.946	1.543	0.814	1.750	0.685	1.977	0.562	2.220	0.447	2.472	0.343	2.727	0.251	2.979	0.175	3.216	0.111	3.438
16	1.106	1.371	0.982	1.539	0.857	1.728	0.734	1.935	0.615	2.157	0.502	2.388	0.398	2.624	0.304	2.860	0.222	3.090	0.155	3.304
17	1.133	1.381	1.015	1.536	0.897	1.710	0.775	1.900	0.664	2.104	0.554	2.318	0.451	2.537	0.356	2.757	0.272	2.975	0.198	3.184
18	1.158	1.391	1.046	1.535	0.933	1.696	0.820	1.872	0.710	2.060	0.603	2.257	0.502	2.461	0.407	2.667	0.321	2.873	0.244	3.073
19	1.180	1.401	1.074	1.536	0.967	1.685	0.859	1.848	0.752	2.023	0.649	2.206	0.549	2.396	0.456	2.589	0.369	2.783	0.290	2.974
20	1.201	1.411	1.100	1.537	0.998	1.676	0.894	1.828	0.792	1.991	0.692	2.162	0.595	2.339	0.502	2.521	0.416	2.704	0.336	2.885
21	1.221	1.420	1.125	1.538	1.026	1.669	0.927	1.812	0.829	1.964	0.732	2.124	0.637	2.290	0.547	2.460	0.461	2.633	0.380	2.806
22	1.239	1.429	1.147	1.541	1.053	1.664	0.958	1.797	0.863	1.940	0.769	2.090	0.677	2.246	0.588	2.407	0.504	2.571	0.424	2.734
23	1.257	1.437	1.168	1.543	1.078	1.660	0.986	1.785	0.895	1.920	0.804	2.061	0.715	2.208	0.628	2.360	0.545	2.514	0.465	2.670
24	1.273	1.446	1.188	1.546	1.101	1.656	1.013	1.775	0.925	1.902	0.837	2.035	0.751	2.174	0.666	2.318	0.584	2.464	0.506	2.613
25	1.288	1.454	1.206	1.550	1.123	1.654	1.038	1.767	0.953	1.886	0.868	2.012	0.784	2.144	0.702	2.280	0.621	2.419	0.544	2.560
26	1.302	1.461	1.224	1.553	1.143	1.652	1.062	1.759	0.979	1.873	0.897	1.992	0.816	2.117	0.735	2.246	0.657	2.379	0.581	2.513
27	1.316	1.469	1.240	1.556	1.162	1.651	1.084	1.753	1.004	1.861	0.925	1.974	0.845	2.093	0.767	2.216	0.691	2.342	0.616	2.470
28	1.328	1.476	1.255	1.560	1.181	1.650	1.104	1.747	1.028	1.850	0.951	1.958	0.874	2.071	0.798	2.188	0.723	2.309	0.650	2.431
29	1.341	1.483	1.270	1.563	1.198	1.650	1.124	1.743	1.050	1.841	0.975	1.944	0.900	2.052	0.826	2.164	0.753	2.278	0.682	2.396
30	1.352	1.489	1.284	1.567	1.214	1.650	1.143	1.739	1.071	1.833	0.998	1.931	0.926	2.034	0.854	2.141	0.782	2.251	0.712	2.363
31	1.363	1.496	1.297	1.570	1.229	1.650	1.160	1.735	1.090	1.825	1.020	1.920	0.950	2.018	0.879	2.120	0.810	2.226	0.741	2.333
32	1.373	1.502	1.309	1.574	1.244	1.650	1.177	1.732	1.109	1.819	1.041	1.909	0.972	2.004	0.904	2.102	0.836	2.203	0.769	2.306
33	1.383	1.508	1.321	1.577	1.258	1.651	1.193	1.730	1.127	1.813	1.061	1.900	0.994	1.991	0.927	2.085	0.861	2.181	0.795	2.281
34	1.393	1.514	1.333	1.580	1.271	1.652	1.208	1.728	1.144	1.808	1.080	1.891	1.015	1.979	0.950	2.069	0.885	2.162	0.821	2.257
35	1.402	1.519	1.343	1.584	1.283	1.653	1.222	1.726	1.160	1.803	1.097	1.884	1.034	1.967	0.971	2.054	0.908	2.144	0.845	2.236
36	1.411	1.525	1.354	1.587	1.295	1.654	1.236	1.724	1.175	1.799	1.114	1.877	1.053	1.957	0.991	2.041	0.930	2.127	0.868	2.216
37	1.419	1.530	1.364	1.590	1.307	1.655	1.249	1.723	1.190	1.795	1.131	1.870	1.071	1.948	1.011	2.029	0.951	2.112	0.891	2.198
38	1.427	1.535	1.373	1.594	1.318	1.656	1.261	1.722	1.204	1.792	1.146	1.864	1.088	1.939	1.029	2.017	0.970	2.098	0.912	2.180
39	1.435	1.540	1.382	1.597	1.328	1.658	1.273	1.722	1.218	1.789	1.161	1.859	1.104	1.932	1.047	2.007	0.990	2.085	0.932	2.164
40	1.442	1.544	1.391	1.600	1.338	1.659	1.285	1.721	1.230	1.786	1.175	1.854	1.120	1.924	1.064	1.997	1.008	2.072	0.945	2.149
45	1.475	1.566	1.430	1.615	1.383	1.666	1.336	1.720	1.287	1.776	1.238	1.835	1.189	1.895	1.139	1.958	1.089	2.022	1.038	2.088
50	1.503	1.585	1.462	1.628	1.421	1.674	1.378	1.721	1.335	1.771	1.291	1.822	1.246	1.875	1.201	1.930	1.156	1.986	1.110	2.044
55	1.528	1.601	1.490	1.641	1.452	1.681	1.414	1.724	1.374	1.768	1.334	1.814	1.294	1.861	1.253	1.909	1.212	1.959	1.170	2.010
60	1.549	1.616	1.514	1.652	1.480	1.689	1.444	1.727	1.408	1.767	1.372	1.808	1.335	1.850	1.298	1.894	1.260	1.939	1.222	1.984
65	1.567	1.629	1.536	1.662	1.503	1.696	1.471	1.731	1.438	1.767	1.404	1.805	1.370	1.843	1.336	1.882	1.301	1.923	1.266	1.964
70	1.583	1.641	1.554	1.672	1.525	1.703	1.494	1.735	1.464	1.768	1.433	1.802	1.401	1.837	1.369	1.873	1.337	1.910	1.305	1.948
75	1.598	1.652	1.571	1.680	1.543	1.709	1.515	1.739	1.487	1.770	1.456	1.801	1.428	1.834	1.399	1.867	1.369	1.901	1.339	1.935
80	1.611	1.662	1.586	1.688	1.560	1.715	1.534	1.743	1.507	1.772	1.480	1.801	1.453	1.831	1.425	1.861	1.397	1.893	1.369	1.925
85	1.624	1.671	1.600	1.696	1.575	1.721	1.550	1.747	1.525	1.774	1.500	1.801	1.474	1.829	1.448	1.857	1.422	1.886	1.396	1.916
90	1.635	1.679	1.612	1.703	1.589	1.726	1.566	1.751	1.542	1.776	1.518	1.801	1.494	1.827	1.469	1.854	1.445	1.881	1.420	1.909
95	1.645	1.687	1.623	1.709	1.602	1.732	1.579	1.755	1.557	1.778	1.535	1.802	1.512	1.827	1.489	1.852	1.465	1.877	1.442	1.903
100	1.654	1.694	1.634	1.715	1.613	1.736	1.592	1.758	1.571	1.780	1.550	1.803	1.528	1.826	1.506	1.850	1.484	1.874	1.462	1.898
150	1.720	1.746	1.706	1.760	1.693	1.774	1.679	1.788	1.665	1.802	1.651	1.817	1.637	1.832	1.622	1.847	1.608	1.862	1.594	1.877
200	1.758	1.778	1.748	1.789	1.738	1.799	1.728	1.810	1.718	1.820	1.707	1.831	1.697	1.841	1.686	1.852	1.675	1.863	1.665	1.874

Source: Savin and White (1977)

## Appendix S: Trend of Empirical Data (1961 to 2017)

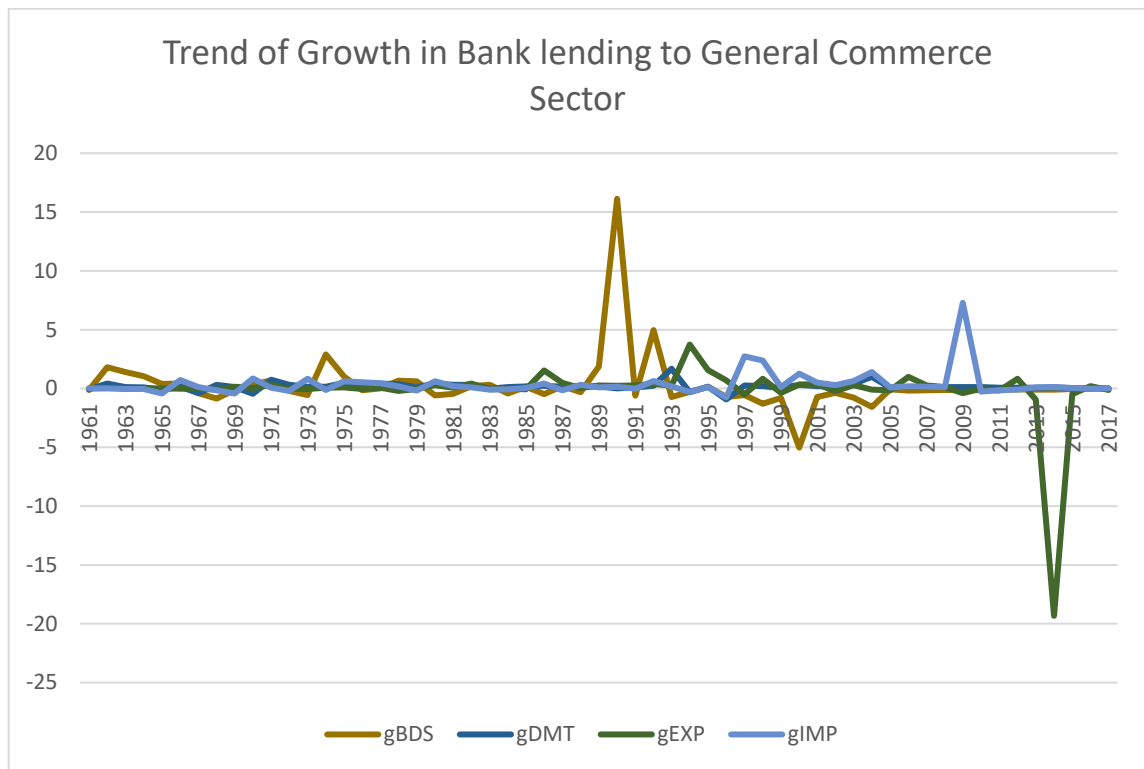


## Appendix S (Continued)

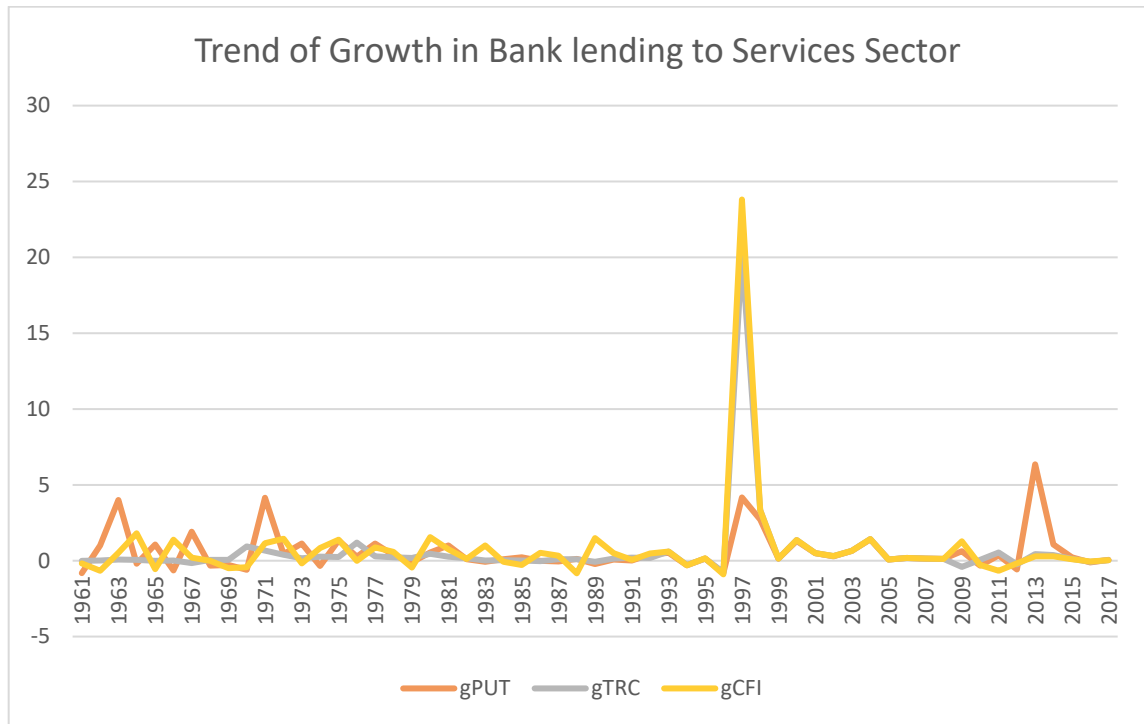




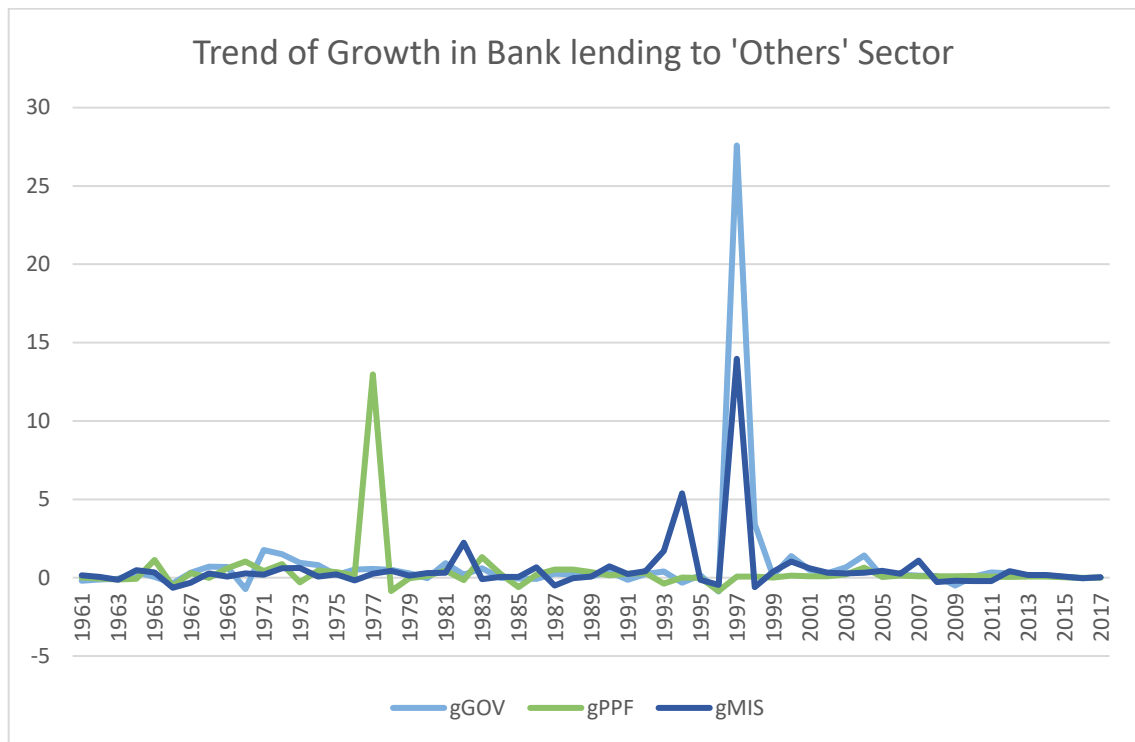
## Appendix S (Continued)



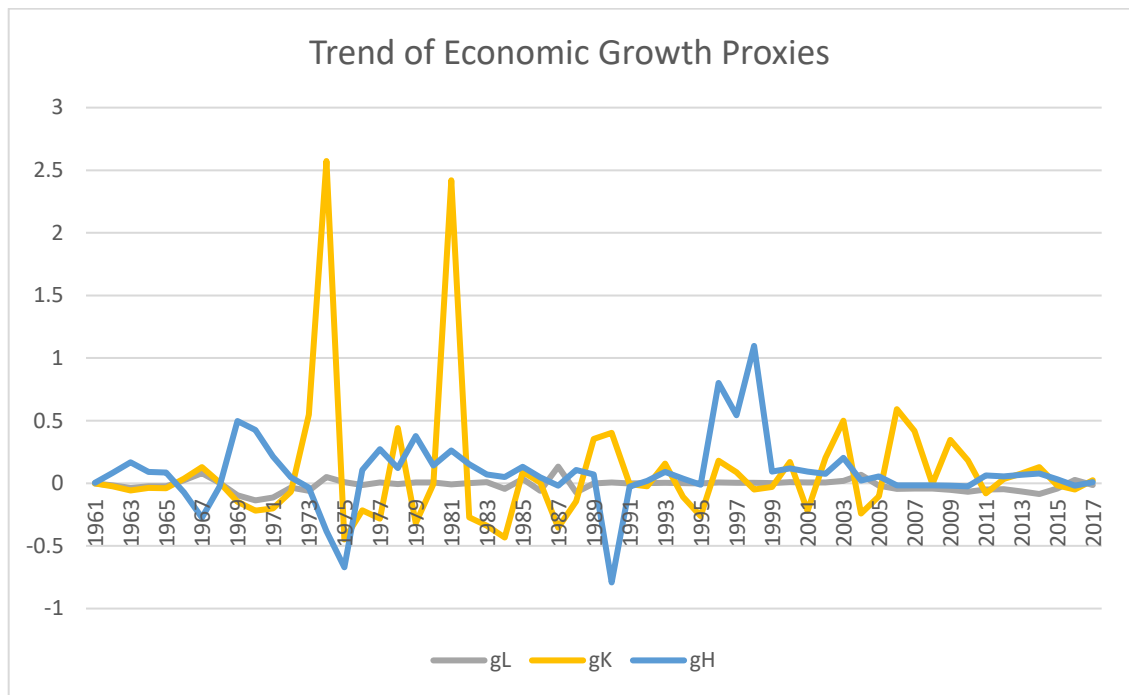
## Appendix S (Continued)



## Appendix S (Continued)



## Appendix S (Continued)



**\*\*\*END\*\*\***