BANKING SECTOR CREDIT AND ECONOMIC GROWTH IN NIGERIA

BY

Ehizefua ADIMAH
MGS1611461

DEPARTMENT OF BANKING AND FINANCE
FACULTY OF MANAGEMENT SCIENCES
UNIVERSITY OF BENIN
BENIN CITY

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A PROJECT WRITTEN AND SUBMITTED TO THE DEPARTMENT OF BANKING AND FINANCE, FACULTY OF MANAGEMENT SCIENCES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc) DEGREE IN BANKING AND FINANCE OF THE UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

I, **Ehizefua ADIMAH** do hereby declare that this project is entirely my work and composition. The work embodied in this project has not been submitted by another candidate for any degree and is not currently being submitted for any other degree. All references made to the works of other persons have been duly acknowledged.

Ehizefua ADIMAH **Date**

CERTIFICATION

We, the undersigned certify that this research work was submitted by **Ehizefua ADIMAH** and it is hereby approved for the partial fulfillment of the requirement for the award of Bachelor of Science (B.Sc) degree in Banking and Finance, University of Benin, Benin City.

Dr. O. Aigbovo
(Project Supervisor)

Date:_____

Dr. J. Obayagbona
(Project Co-odinator)

Date:_____

Dr. O.G. Omorokunwa
(Head of Department)

Date:_____

DEDICATION

I dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this project and on His wings only have I soared.

I also dedicate this project to my late father because I know wherever he is right now he is happy and my loving mother who encouraged me all the way and whose encouragement have made sure I give it all it takes to finish that which I have started. May God keep and bless her now and always. Amen

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ABSTRACT

This study investigates the impact of bank credit on economic growth in Nigeria applying the multivariate ordinary least square (OLS) technique using time series data from 1981 to 2020. Real gross domestic product (RGDP) is the dependent variable and proxy for economic growth while bank credit to the private sector (PSC) and aggregate bank credit (ABKC) were proxies for bank credit respectively. A major finding is that there is a significant negative relationship between bank private sector and economic growth while a significant positive relationship was found between aggregate bank credit and economic growth. Inflation rate and trade openness were found not to be a key factor that influence economic growth in Nigeria for the period studied. The study recommends that government should ensure strict regulatory measures through the use of its monetary policies to regulate the banking sector. The Central Bank of Nigeria, through the use of its credit control instruments should regulate the interest rates to enable the private sector borrow at a moderate rate thereby enhancing investment, which in turn leads to economic growth. Also, the monetary authorities and other financial institutions should be strengthened in their regulatory frame work and capacity to maintain financial stability and banking sector reforms.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The importance of financial institutions in generating growth within the economy has been widely discussed in the literature. Early economists such as Schumpeter in 1911 identified banks' role in facilitating technological innovation through their intermediary role. He believed that efficient allocation of savings through identification and funding of entrepreneurs with the best chances of successfully implementing innovative products and production processes are tools to achieve this objective. Several scholars thereafter (McKinnon, 1973; Shaw, 1973; Fry, 1988; King & Levine, 1993) have supported the above postulation about the significance of banks to the growth of the economy.

The banking industry is the main source of financing for the business community and its role in economic growth and development is vital in developing countries like Nigeria. In the financial system, deposit money banks remain one of the major contributors to growth through the intermediation and channeling of funds among economic agents in the economy (Marshal, Solomon & Onyekachi, 2015). Banking lending remains one of the major important functions of banks in the economy. Access to bank credit strengthens productive assets by ensuring investment in productive sectors, education or health sector which have ripple effect on the growth of the economy

(Anthony, 2012). Thus, bank credit promotes investments which in turn have a positive effect on economic growth.

Literature has shown that bank credit availability plays an important part in stimulating economic growth. More so, it has also been shown that economic growth is also essential for growth in credit as demand for goods and services. Thus, according to Yakubu and Affoi (2013), there is an established fundamental relationship between credit and economic growth through financial intermediation. Thus, credit extension is an important function of financial intermediation that ensures the provision of funds to economic entities that channel them to productive use. According to Nzotta (2004), it is generally accepted that bank credits influence positively the level of economic activities in any country. It influences what is to be produced, who produces it and quantity to be produced.

The involvement of banks in financial intermediation process automatically links credit and GDP growth because it is almost impossible to separate credit from banks. Specifically, banks are creditors to those seeking funds and debtors to those depositing or lending funds. Thus, credit extension by banks is referred to as the borrowing capacity by the banking system in the form of loans provided to an individual, government, firm or organization. It is for this reason; it is argued that credit availability enables the function of financial intermediation to be intact and subsequently spills

over to economic growth (Spencer, 1977)). The focus of this study is to investigate the effect of banking sector credit on economic growth in Nigeria.

1.2 Statement of the Research Problem

There are diverse studies on the relationship between bank credit and economic growth. There seems to be inconclusive empirical findings as to the linkages between bank credit and economic growth. Akujuobi and Nwezeaku (2015); Marshal et al. (2015); Igyo, Simon and Lorlumun (2016) as well as Makinde (2016) concluded that there is significant relationship between bank credit and economic growth while Ekpenyong and Aecha (2011); Azeez and Oke (2012) and Odofuye (2017) found insignificant relationship between bank credit and economic growth. Thus, the bank credit and economic growth link has not been resolved and remains controversial among researchers. Furthermore, majority of the study conducted did not properly disaggregate bank sector credit and how they influence the economy. Similarly, the direction of causality between the disaggregated bank credit to different sectors and economic growth was not adequately documented. These revealing gaps are what this study set out to fill by examining the effect of bank credit on the economic growth in Nigeria.

1.3 Research Questions

This study seeks to provide answers to the following research questions:

(i) What is the effect of private sector credit on economic growth in Nigeria?

(ii) What is the effect of aggregate bank credit on economic growth in Nigeria?

(iii) What is the direction of causation between bank credit and economic growth in Nigeria?

1.4 Objectives of the Study

The broad objectives of this study are to ascertain the effect of bank credit on economic growth in Nigeria. The specific objectives are to:

(i) examine the effect of private sector credit on economic growth in Nigeria;

(ii) determine the effect of aggregate bank credit on economic growth in Nigeria; and

(iii) ascertain the direction of causation between bank credit (private sector credit and aggregate bank credit) economic growth in Nigeria

1.5 Research Hypotheses

This study tested the following hypotheses.

$H0_1$: Private sector credit has no significant effect on economic growth in Nigeria.

$H0_2$: Aggregate bank credit has no significant effect on economic growth in Nigeria.

$H0_3$: Bank credit (private sector credit and aggregate bank credit) do not Granger-cause economic growth in Nigeria or economic growth does not Granger-cause bank credit in Nigeria

1.6 Scope of the Study

The study will focus on the impact of banking industry credit on economic growth in Nigeria over the period 1981 – 2020 (40 years). Bank credits as shall be used in this study are credits advanced by the deposit money banks in Nigeria. Types of bank credits to be captured will include private sector credit and aggregate bank credits, while economic growth shall be proxied by the real Gross Domestic product (RGDP). The justification for the choice of the period was to capture the period before and after the banking sector reform in Nigeria.

1.7 Significance of the Study

The significance of this study cannot be over stressed, as the anticipated findings will enrich our understanding of the effect of bank credit on economic growth in Nigeria. The study will be of immense benefit to the following:

Bankers: The study will enhance their understanding of the relationships existing between bank credits and economic growth. This will go a long way in enabling them carry out efficient financial intermediation function bearing in mind how it will impact on economic growth.

Regulators of the Financial Industry/Government: When economic growth is of the essence, they will find this research relevant in their policy strategies, and regulatory prerogatives aimed at fostering sustainable economic growth and building efficient financial sector development. Different levels of government will find this study useful especially policy implementation, enactment of laws and making pronouncement that will promote economic growth.

Investors: Both foreign and indigenous investors in the Nigerian economy will stand to take advantage of the findings of this this study. The study will sharpen their understanding of the relationships between financial development and economic growth. When they understand the relevance of bank credits to increase in productivity, it will enable them make rational decisions in obtaining funds at a price and amount that will serve their needs.

Researchers: other researchers will find this study very useful since it will add to the existing knowledge. Such researchers and students who wish to carry out a related study will have to use it as a research material.

1.8 Limitations of the Study

The study is based on the data set that is collected from the publications of the Central Bank of Nigeria Statistical Bulletin. The reliability and the accuracy of the data will therefore, affect the robustness of the present study. Additionally, the findings of this

study can only be generalized to Nigeria, since it is a country specific study and not a cross country study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The objective of this chapter is review the literature on to the effect of bank credit on economic growth. The chapter is structured as follows after this introductory section. Section 2.2 provides the conceptual literature while the theoretical literature is reviewed in section 2.3, and section 2.4 reviews the empirical literature, section 2.5 identifies research gaps.

2.2 Conceptual Literature

2.2.1 Economic Growth

Economic growth is defined as a positive change in the national income or the level of production of goods and services by a country over a certain period of time. This is often measured in terms of the level of production within the economy. Other possible measures include total factor productivity, factors of production such as technological change, human capital termed the Schumpeterian approach, other measures of growth ranges from real per capita GDP; the rate of physical capital accumulation e.t.c (Odedokun, 1998; King & Levine, 1993; Allen & Ndikumama, 1998). Todara and Smith (2006) saw economic growth as a steady process by which the productive capacity of the economy is increased overtime to bring rising levels of national output and

income. Economic growth is the increase in the productive capacity of an economy. It is a sustained increase in the production of goods and services of a nation during a period of time. Baye and Jansen (2006) defined economic growth as the rate of change in real output. The economic growth rate is usually stated as percentage change on an annual basis. Aretis and Sawyer (2007) explains economic growth to involve the expansion on real output per capita and per worker over time.

According to Ogbonna and Appah (2011), economic growth is a constant increase in per capita national output or net national product over a long period of time. The term economic growth is described as the positive and continuous increase in aggregate goods and services produced in an economy within a given period of time. Economic growth according to Oluitan (2012), is defined as a positive change in the national income or the level of production of goods and services by a country over a certain period of time.

Economic growth refers to the improvement in the economic conditions of an economy. It is the continuous increase in the productive capacity of an economy and the ability to satisfy demand for goods and services, resulting from increased innovation and production scale over a particular period of time (Olowofeso, Adeleke & Udoji, 2015). According to Bakare, Isaac, and Samuel (2015), economic growth is the positive change in the production level of goods and services and significant improvement of a country over a certain period of time. The important measure of

economic growth is gross domestic product which measures the monetary value of goods and services that are produced in the economy during a fiscal year. Other possible measures include total factor productivity, factors of production such as technological change, human capital termed the Schumpeterian approach. Other measure of growth ranges from real per capita GDP; the rate of physical capital accumulation etc, (Odedokun, 1998, King & Levine, 1993 and Allen & Ndikumama, 1998).

2.2.2 Bank Credit

The Central Bank of Nigeria Brief (2003) defines bank credit as the amount of loans and advances given by the banking sector to the various economic agents. According to Nwanyanwu (2008), bank credit is the borrowing capacity provided to an individual, government, firm or organization by the banking system in the form of loans. The Central Bank of Nigeria (CBN) Monetary Policy Circular (2010) identifies such bank credits as comprising loans and advances, commercial papers, bankers' acceptance and bills discounted. Bank credit is usually accompanied with some collateral that helps to ensure the repayment of the loan in the event of default.

Bank credit involves contractual agreement between a bank and customer in which financial resources are made available to the customer in terms of credit with a promise to repay the credit at a future period with interest. According to John and Terhemba (2016), bank credit is the process of making money available to a customer based on some agreed terms with regards to repayment with interest. Ajayi (2000) noted

that credit is a promise by one party to pay another for money borrowed or goods and services received. Banks are therefore debtors to the depositors of funds and creditors to the borrowers of funds (Ogunmuyiwa, Okunneye & Amaefule, 2017).

2.3 Review of Theoretical Literature

2.3.1 Theories of Economic Growth

There are numerous growth models in literature. However, there is no consensus as to which strategy will achieve the best success. The achievement of sustained growth requires minimum levels of skills and literacy on the part of the population, a shift from personal or family organization to large scale unit (Nnanna, 2004). Some of the existing growth models are Two-gap Model, Maxian Theory, Schumpeterian Theory, Harrod-Domar Theory of growth, Neo-Classical Model of Growth, and Endogenous Growth Theory. The growth models relevant to this study are Neo-Classical Model of Growth, and Endogenous Growth Theory, since these growth models explain the situation very peculiar in developing economies such as Nigeria.

2.3.1.1 Neo-Classical Model of Growth

This model was engineered by Robert Solow. According to Haji (2015) neoclassical growth theory is an economic theory that explains how significant levels of growth in an economy can be accomplished with sufficient levels of three factors: labour, capital and technology. The theory focuses a lot on increasing levels of capital in the economic

growth process. It is observed by a long-run growth model that includes; capital and labour that are denoted by production function written as: **Y = F (K, AL).**

Y denotes an economy's GDP, **K** denotes capital; **L** denotes the amount of unskilled labour and **A** denotes technology. A pattern of growth is shown by the ratio of capital to labour. Capital is seen to be the main factor that contributes to growth in the long term. Technological change as a channel of financial development has also been found to be efficient, which also distributes incentives for sustained accumulation of capital. Therefore, increase in levels of capital supported by change and improvements in technology leads to an increase in the production, which in the long run expedites the level of economic growth of a country. According to theory, growth of an economy is shown to be positively impacted on by financial development, Haji (2015).

2.3.1.2 Endogenous Growth Theory

This theory was developed in the 1980s responses to criticism of the neo-classical model of growth. The endogenous growth theory states policies in a country can have an impact on growth rate of an economy, in the long run. The variables within the model determine the long run growth rate, in comparison to the Neo-Classical model of growth that includes technological progress as an exogenous variable. The main assumptions included in the Neo-Classical model of growth which are; technological change is an exogenous variable, and that all countries in the world can obtain the same opportunities with regards to technology have been dismissed, Haji (2015).

Romer (1994) observes that when developing and developed countries are compared, the per capital income in the different countries does not converge in all countries. A higher rate of investment, and better institutions would be necessary to achieve the same result. Developing countries do not develop any faster than developed countries, and the rate of growth of the latter is expected to increase in the future, which shows that the level of technology is different countries is indeed not similar. Romer (1994) argues that the Neo-Classical model of growth is characterised by perfect competition there is existence several buyers and sellers in an economy, information is free and easily accessible, physical activities may be replicated, in the end showing that innovation and change in technology is not simply accidental and many businesses and individual people hold the market power and that monopoly profits can be earned since the opportunity cost of obtaining information is not there.

In the endogenous growth model, development of financial systems and access to finance can impact growth in the following ways; improving the efficiency of financial intermediation, increasing the marginal productivity of capital and also increasing the average savings rate in an economy (Aretis & Sawyer, 2018). Financial institutions can therefore affect economic growth by efficiently and transparently undertaking their functions, for example through is the provision of credit Adekola (2016) which is the main factor discussed in this study.

2.4 Empirical Review

A number of works have been done on the effect of bank credit on economic growth. Some of the empirical researches of prior studies are reviewed below.

Mohamed (2008) examine the short-run and long –run relationship between financial development and economic growth in Sudan. Financial development was proxy by private sector credit. His model was estimated by autoregressive distributed lag approach (ARDL). He finds that the relationship between financial development and economic growth is weak, and the impact of credit of privet sector by banks to real GDP is negative and insignificant.

Adenugba (2012) investigated the impact of banking system credit on economic growth in Nigeria by employing time series data collected from the CBN Statistical Bulletin ranging from 1983 to 2012, analyzed using the Ordinary Least Square (OLS) technique, also, it was found that bank credit, money supply, and minimum rediscounted rate had positive and significant effect on economic growth while savings and exchange rate had negative and significant effect on economic growth.

Akpansung and Babalola (2012) examined the relationship between banking sector credit and economic growth in Nigeria over the period 1970-2008 using the two-stage least squares approach. It was found that private sector credit impacted positively on economic growth during the sample period while lending rate impeded economic growth. Oluitan (2012) assessed the effect of bank credit on economic growth in Nigeria.

It was found that oil export had negative effect on economic growth while non-oil export and bank credit had positive effect.

Al-Malkawi and Abdullah (2012) investigate the relationship between financial development and economic growth in UAE, the study applied (ARDL) approach to co-integration and two indicators to examine this relation: the first is the size of the financial intermediaries sector ,and the second indicator is the ration of the credit provided to private sector by commercial banks as a percentage of the GDP .The study found a significant negative relationship between financial development and economic growth, also the results suggest a bidirectional causality between the two variables.

Anthony (2012) investigated the determinants of bank savings in Nigeria as well as examined the impact of bank savings and bank credits on Nigeria's economic growth from 1970 to 2006 through the adoption of Distributed Lag-Error Correction Model (DL-ECM) and Distributed Model. The empirical results showed that there is positive relationship between GDP per capita, financial deepening, and interest rate spread, and more, a negative relationship between real interest rate and inflation rate and size of private domestic savings. Also it was discovered that total private savings, private sector credit, public sector credit, interest rate spread, and exchange had positive effect on economic growth.

Murty, Sailaja and Demissie (2012) carried a study on the long-run impact of bank credit on economic growth in Ethiopia: evidence from Johansen's multivariate co-

integration approach. The time series study was analyzed by an error correction model. The study finds a significant long-run relationship between bank credits and economic growth in Ethiopia. The study concludes therefore, that through efficient resource allocation mechanisms and domestic capital accumulation, bank credits positively influence economic growth in Ethiopia. Shittu (2012) examined the impact of financial intermediation on economic growth in Nigeria between 1970 and 2010 using the unit root test and co-integration test and the error correction model. The study found that financial intermediation notable deposit mobilization is significant in determining economic growth in Nigeria.

Aliero, Abdullahi, and Adamu (2013) examined the relationship between the private sector and economic growth in Nigeria using autoregressive distributed lag (ARDL) approach and concluded that a long-run equilibrium relationship exists between private sector credit and economic growth. They found a significant relationship between the private sector and economic growth in Nigeria. Ogege and Shiro (2013) in a study covering 1974 to 2010 used co-integration and error correction model, discovered a long-run relationship and concluded that commercial credits contribute positively to growth but is significant in the long run.

Aigbovo and Osamwonyi (2013) examine the relationship between banking sector development and economic growth in Nigeria using time series econometric techniques (unit root test, ordinary least squares (OLS) and granger causality test) over the period of

1981-2011. They found that that all the explanatory variables (total asset of deposit money banks/GDP (BA), Private Sector Credit/GDP (PSC), liquid liability ratio of banks (BLL)) were significant positive determinants of economic growth in Nigeria, with the exception of liquid liability ratio of banks (BLL) , which although was significant, had a negative sign in the regression results. With respect to Causality tests, they found a one-way causality running from economic growth to banking sector development when total asset of deposit money banks/GDP (BA) was used as a measure of banking sector development.

Osman (2014) investigate the relationship between private sector credit and economic growth in Saudi Arabia using the autoregressive distributed lag (ARDL) models approach to co-integration, on annual time series data from (1974-2012). Six variables were used, mainly GDP, private sector credit (BF), and the rest other four control variables ,commercial bank's deposits (DS), government expenditure (G), inflation rate (CPI) and open economy (OPE). Where the study found different results on the results of other researchers. The study found that there is a long-run relationship between (BF) and economic growth. Moreover, (BF) has positive long and short-run relationship and the elasticity of GDP to the (BF) was (0.054) and (0.068) for long-run and short-run respectively.

Nwaru and Okorontah (2014) investigated bank credit versus output using multiple regression and it revealed that credit to the private sector is positive but insignificant and

that real output causes financial development, but not vice versa. Nwakanma, Nnamdi, and Omojefe (2014) evaluated the long-run relationship and the directions of prevailing causality between bank credits to the private sector and the nation's economic growth. The study concluded based on the Autoregressive Distributed Lag Bound (ARDL) and Granger Causality that bank credits have significant long-run relationship with growth but without significant causality in any direction.

Anake, Obium and Chijindu (2015) analysed the impact of bank credit on economic growth in Nigeria during the period spanning from 1987 to 2012. The study adopted the ex-post facto research design and time series data were collated from the Central Bank of Nigeria Statistical Bulletin. OLS regression statistic and Granger Causality Test were used to analyse the data. The estimated regression results indicated that bank credit has impacted positively and significantly on economic growth over the period of the study.

Akujuobi and Nwezeaku (2015) examined the effect of bank lending activities on economic development in Nigeria, covering the period 1980-2013, by employing two development proxy, namely, human development index and the industrial gross domestic product; while commercial bank credit to the general commerce, production, services, and other sectors formed components of bank lending activities and analysis using Ordinary Least Square (OLS) and Co-integration Techniques. It was revealed that model 1, both credit to the general commerce and production sectors, had significant

effect on economic development while model 2 showed that only credit to the services sector had insignificant effect on economic development.

Olowofeso et al. (2015) examined the impacts of private sector credit on economic growth in Nigeria using the fully modified ordinary least squares from 2000 to 2014. It was found that credit to private sector, government expenditure, and gross capital formation had positive effect on economic growth, while prime lending rate had negative and significant effect on economic growth in Nigeria.

Marshal et al. (2015) looked into the impact of bank domestic credits on the economic growth of Nigeria using time series data from 1980 to 2013. The study employed credit to private sector, credit to government sector, and contingent liability as proxy for bank domestic credit, while gross domestic product represented economic growth. The results of the study showed that credit to the private sector (CPS) and Credit to the government sector (CGS) had positive and significant effect on gross domestic product in the short run, while bank domestic credit had insignificant effect on gross domestic product in Nigeria in the long run.

Obradovi and Grbic (2015) investigated the causal relationship between financial development of banks and economic growth in Serbia. The study employed quarterly data for the period Q1 2004–Q4 2011 which was evaluated using Toda-Yamamoto causality to test the direction of causality among real GDP growth rate, Ratio of bank credit to households to GDP, Ratio of bank credit to private enterprises to GDP, Ratio of

bank credit to households to GDP, and Ratio of bank deposit liabilities to nominal GDP. It was revealed that there is a significant unidirectional causality that runs from both private enterprise credit to GDP and household credit to GDP to economic growth.

In China, Wang, Li, Abdou, and Ntim (2015) examined the relationship between financial development and economic growth. Ordinary Least Square (OLS) multiple regressions were applied on a set of data from China for the period 1978 to 2013 to determine the effects of financial development on economic growth. Results revealed that financial development had negative effects on economic growth in general, though on the growth of the tertiary industry in particular. Also, it was found that financial development has no significant effect on the primary and secondary industries.

Sipahutar, Oktaviani, Siregar, and Juanda (2016) explored the effect of credit on economic growth, unemployment, and poverty in Indonesia. The study employed Vector Auto-regression (VAR) and Error Correction Model (ECM) to examine the relationship between banks credit and annual GDP per capita growth rates, unemployment, and poverty. It was found that there exists bidirectional causality between banks credit and economic growth.

Amoo, Eboreime, Adamu, and Belonwu (2017) examined the local conditions and policy environment that influence the absorptive capacity of credit in the Nigerian economy for the period 1993:Q1 to 2013:Q4 using fully modified least squares. Findings show that credit is growth-enhancing, even when trade openness, monetary policy, investment

climate and infrastructure are low. Also, the composite local condition index analysis revealed that private sector credit increased economic growth when domestic or local conditions were favourable and the absorptive capacity of the domestic economy for credit was estimated at 29% of the GDP in 2013. These results suggest that there is ample room for growth-enhancing credit expansion in Nigeria.

Ono (2017) assessed the finance-growth nexus in Russia using vector auto regression model. The empirical analysis was divided into two major parts: 1999 through 2008 was named subperiod 1, while 2009 through 2014 was named sub-period 2. The first part of the analysis revealed that there is causality from economic growth to money supply and bank lending, which implies demand-following responses; while the second part of the empirical analysis revealed that economic growth granger causes bank lending although there is no causality from money supply to economic growth. Odufuye (2017) investigated the impact of bank credit on the Nigerian economy growth from 1992 to 2015 by employing gross domestic product as proxy for economic growth and commercial bank credits to small and medium scale enterprises, credits to private sector, money supply, and interest rate as for bank credit. And it was revealed that commercial bank credits to small and medium scale enterprises, credits to private sector, money supply, and interest rate had insignificant impact on gross domestic product while bank credit instruments jointly influenced gross domestic product.

Akinmulegun, Akinde, and Popoola (2018) examined the relationship between deposit money bank credit and economic growth in Nigeria based on secondary data from 2006 to 2015 using multiple regression analysis. And it was revealed in equation I that there exists a positive correlation between the dependent variable (Total Bank Credit) and independent variable (Cash Reserve Ratio, Liquidity Ratio, Deposit Rate, Lending Rate), while the result of equation II indicated that there exists a positive correlation between the dependent variable (GDP) and independent variable (bank credit, Interest rate/Lending rate, inflation rates).

Akinwale and Obagunwa (2019) study investigated the effect of bank credit on economic growth in Nigeria by using secondary data from Central Bank of Nigeria (CBN) Statistical Bulletin covering the period of 1981 to 2017. The study employed Augmented Dickey – Fuller (ADF), Johansen C-integration, Error Correction Model, and Pairwise Granger Causality Techniques. The result ADF indicated that credit to manufacturing sector (CMS), agricultural sector (ACS), general commerce (CGC), and real gross domestic product (RGDP) were stationary at first difference order of integration. On the other hand, the Johansen Co-integration test revealed that there is a long-run relationship among the variables. The result of the Error Correction Model revealed that CMS and ACS simulate RGPS while CGC negatively influenced economic growth in Nigeria. Also, CMS and ACS granger did not cause RGDP, but CGS granger caused RGDP. The study concluded that bank credit to different sectors of the economy plays significant role in promoting economic growth in Nigeria.

Majeed and Iftikhar (2020) examined the impact of banking sector credit on sectoral and sub-sectoral level of economic growth of Pakistan by using time series data from 1982 to 2017. The empirical aggregated analysis indicates that the magnitude of the private sector credit has positive sign, but insignificant influence on aggregate level of economic growth. On the other hand, sectoral analysis reveals that agriculture sector is not positively influenced by providing credit to agriculture sector. In contrast, industrial sector relies more on banking sector finance for its long-lasting projects. Moreover, sub-sectoral analysis shows that manufacturing sector is positively and statistically significant with manufacturing sector credit. Similarly, transport and communication, construction, wholesale and retail trade are positively influenced by their respective sectors credits.

2.7 Gaps in Literature Reviewed

There is a general consensus in the theoretical models that capital inflow is crucial for the growth of an economy amid the varying explanations on how expansion is attainable. Financial sector's provision of debt to facilitate the capital accumulation is therefore of significance relevance especially to a country like Nigeria where its vision is pegged on performance of the oil industry and its expected positive impact on expansion of the economy. From the empirical literature reviewed, the absence of a common agreed stance on the impact of bank credit on economic growth is evident. There is a glaring paucity of studies examining the causal link between bank credit and economic growth in Nigeria. These are the knowledge gaps this study intended to fill

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The chapter discusses the method and the procedures that will be adopted in carrying out the study. It includes the research design, the population and sample of the study, the method of data collection, method of data analysis, the model specification, and measurement of the variables.

3.2 Research Design

The research design adopts in this study is the longitudinal research design, which is very applicable in the management and social sciences. Longitudinal research design involves secondary data in which responses in the nature of a factor and its effects on individuals are being studied, the researcher does not have the ability or opportunity to vary or manipulate the independent variables. The inability to manipulate the independent variables stem from the fact that the variables are inherently non-manipulable or because their manifestations have already occurred.

3.3 The Population of the Study

The target population for this study was all sectors of the Nigerian economy for data relating to economic growth. While for bank credit, figures for study covers all the domestic credit provided to private sector and aggregate credit.

3.4 Sampling Sample Size

This was a sample of forty (40) most recent years. The annual data for the dependent and independent variables were obtained for the year 1981 to 2020. These data were selected using the convenient sampling technique.

3.5 Sources of Data

The nature of this study necessitated the use of secondary data. The secondary data are drawn or collected from Central Bank of Nigeria (CBN) statistical Bulletin 2020.

3.6 Theoretical Framework

This study is anchored on the Endogenous Growth theory due to its strengths that overcome the challenges faced by the neoclassical theory. The endogenous growth theory supersedes the neo classical theory by resolving the issue of diminishing returns that void the latter from modeling long-run economic growth through the introduction of technological transfers. The endogenous theory models are also more complete models since they include factors excluded by the neo classical theories such

as human capital, social capital, intellectual capital, public infrastructure (Arestis & Sawyer, 2018). Romer (1994) postulates that the endogenous theoretical work is not based on exogenous technological change to explain per capita growth or measure a growth accounting residual growing differently across nations, but rather attempt to examine the private and public choices resulting to the residue's rate of growth varying across countries. The AK model formulated by Pagano (1993) also provides an analytical foundation for empirical evaluation of the interaction between developments in sector of finance and growth of a nation's economy.

3.7 Model Specification

The analytical model for this study was specified based on the model established in the extant literatures that link bank credit to economic growth. Hence, the model of Odufuye (2017) was adopted and modified in terms of variables included to proxy bank credit. Odufuye (2017) utilized bank credit to small and medium scale enterprise and private sector credit in their model why in this study we use private sector credit and aggregate bank credit to proxy bank credit in other to suit the objectives of our study. We also include trade openness and inflation in our model as control variables. Consequently, the functional form of the modified model is specified as:

RGDP = f (PSC, ABKC, TOP, INF) ………………….. (1)

This is further expressed in econometric form as:

$RGDP = \beta_0 + \beta_1 PSC + \beta_2 ABKC + \beta_3 TOP + \beta_4 INF + \mu$ .... (2)

Where:

RGDP = Real Gross Domestic Product

PSC = Private Sector Credit

ABKC = Aggregate Bank Credit

TOP = Trade Openness

INF = Inflation Rate

$\beta_0 \ldots \beta_4$ are coefficients of the parameters.

μ = the error term

The a *priori* expectation: β_1, β_2, and $\beta_3 > 0$, $\beta_4 < 0$.

Theoretically, it is expected that private sector credit, aggregate bank n credit and trade openness have positive relationship with economic growth while inflation rate is expected to have a negative relationship with economic growth.

3.8 Measurement of Variables

The definition of the variables in the model as well as sources of data is provided in Table 3.1.

Table 3.1: Operational Definitions of the Variables

S/N	Variable	Type of Variable	Measurement
1	Economic Growth – Real GDP	Dependent Variable	Measured as the GDP deflated for inflation – Real GDP
2	Private Sector Credit (BSD)	Independent Variable	Private sector Credit will be measure as domestic credit provided to private sectors by the banks (by way of loans, trade credit, purchases of non-equity securities)
3	Aggregate Bank Credit(ABKC)	Independent Variable	Aggregate Bank Credit will be measured as the domestic credit provided to all the sector in Nigeria
4	Trade Openness (TOPN)	Independent Variable	Trade openness is measure as: (import+ export/GDP).
5	Inflation Rate (INFR)	Independent Variable	measured as the annual change in the CPI: $(CPI_t - CPI_{t-1}) / CPI_{t-1}$

Source: Researcher's Compilation, (2021).

3.9 Data Estimation Methods

The procedure adopted for our data analysis will be purely econometric procedures using ordinary least square (OLS) technique to analyse the variables of interest, whether there exist any relationship between dependent and independent variables. This method will enable the researcher to access the impact of the independent variables on the dependent variable. Therefore, the OLS regression is the statistical device or instrument used in testing the various hypotheses formulated in chapter one. All the analysis and interpretation are based on the outcome of the regression results. The granger causality test was used to ascertain the direction of causality between the variables.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

The presentation and analysis of the data used for the empirical evaluation of the study is performed in this chapter. The analysis encompasses the use of both statistical and econometric techniques in order to provide a rich background for the investigation. The statistical tools employed are the descriptive statistics and correlation analysis. These statistics are used to provide the initial characterization of the data. For the Econometric analysis, ordinary least square (OLS) technique was used to estimate the empirical model drawn from the time series data in order to concisely determine the effect of independent variables on the dependent variable.

4.2 Descriptive Statistics

Table 4.1 gives a descriptive summary of the dependent variable (economic growth) and independent variables (private sector credit, aggregate bank credit, trade openness and inflation rate) in Nigeria from 40 observations covering 1981 – 2020 (40 years period).

Table 4.1: Descriptive Statistics

	RGDP	PSC	ABKC	INFR	TOPN
Mean	305078.0	5877.574	4306.979	19.54100	29.63850
Median	269457.8	647.6650	652.2300	12.10000	30.96500
Maximum	801442.2	26821.94	17187.77	76.88000	58.92000
Minimum	59929.89	8.570000	8.580000	0.200000	7.360000
Std. Dev.	210786.3	8591.324	5884.684	17.79386	12.51935
Skewness	0.870342	1.207448	1.067211	1.720078	0.072590
Kurtosis	2.839147	2.930818	2.595193	5.096439	2.339543
Jarque-Bera	5.093095	9.727512	7.866046	27.04956	0.762135
Probability	0.078352	0.007721	0.019584	0.000001	0.683132
Sum	12203119	235103.0	172279.1	781.6400	1185.540
Sum Sq. Dev.	1.73E+12	2.88E+09	1.35E+09	12348.23	6112.632
Observations	40	40	40	40	40

Source: Results extracted from E-views 8.0 Output, (2021).

An examination of the descriptive statistics in Table 4.1 for the dependent and independent variables reveals several issues. Economic growth (RGDP) which is the dependent variable has a mean value of 305078.0 and a standard deviation of 210786.3. This shows that the discrepancies from the mean for the dependent variable is high and suggests that RGDP over the years exhibits a high deviation from the mean. The kurtosis which indicates the peakedness or flatness of the distribution of the series stood at 2.839147. It suggests that the distribution is peaked (leptokurtic). The Jarque-Bera test statistic suggests that only RGDP and TOPN variables are normally distributed since their p-values are each greater than 0.05.

For the independent variables, the results indicate that the mean values for private sector credit (PSC), aggregate bank credit (ABKC), trade openness (TOPN) and inflation rate (INF) are 5877.574, 4306.979, 29.63850 and 19.46750 respectively while their respective standard deviation are 8591.324, 5884.684, 17.79386 and 12.51935. This shows that the

discrepancies from the mean for all the independent variables are quiet large. This suggests that the variables over the years exhibit a high deviation from the means. The skewness is positive while the kurtosis is also positive and platykurtic, implying the distribution is flat around mean of the variable in the period. Trade openness has a Jarque-Bera value that is greater than (>) 5 and statistically insignificant. This shows that the variables is normally distributed while that of PSC, ABKC and INF are statistically significant, hence not normally distributed.

4.3 Correlation Matrix

It is important to ensure that the independent variables in the models do not have excessive correlation patterns when carrying out econometric analysis. Furthermore, it is essential to examine, in a preliminary manner, the relationships among the variables in the study. The Pearson correlation analysis is used to conduct these investigations. The Pearson correlation coefficient serves to measure the strength of linear relationship between the dependent variable and its explanatory variables. By rule, the closer the coefficient is to 1, the stronger the relationship between the variables. The result of the correlation tests are reported in Table 4.2.

Table 4.2: Pearson Correlation Statistics

	RGDP	PSC	ABKC	INFR	TOPN
RGDP	1.000000				
PSC	-0.337314	1.000000			
ABKC	-0.247172	0.488038	1.000000		
INFR	-0.115912	-0.286457	-0.305201	1.000000	
TOPN	0.508492	-0.175863	-0.149488	-0.074809	1.000000

Source: Results extracted from E-views 8.0 Output, (2021).

Table 4.2 shows the Pearson Correlation coefficient matrix which indicates the strength of linear relationship between economic growth and its explanatory variables, namely Private sector credit (PSC), Aggregate bank credit (ABKC), Inflation rate (INFR) and Trade openness (TOPN). The correlation coefficient between RGDP and PSC stood at -0.337314, representing 33.73% association; RGDP and ABKC is -0.247172, representing 24.71% association; also, the correlation coefficient between RGDP and INFR is -0.11912, representing 11.91% association while the correlation between RGDP and TOPN is 0.508492, representing 50.84% association.

On the association among the independent variables, we can observe that a positive correlation exists between ABKC and PSC; TOPN while the correlation between all the other independent variables were negative. The strength of association exhibited by these variables attests to the fact that none of the variables is strongly correlated and this suggests the absence of multicollinearity. Hence, the variables are appropriate for conducting regression analysis.

4.4 Ordinary Least Square (OLS) Regression Estimation

The ordinary least squares (OLS) regression equation for the time series data of 40-years range, 1981 - 2020 indicated the presence of autocorrelation with DW= 0.77 thus rendering the initial results spurious (see appendix for the result). To correct for autocorrelation, the Cochrane-Orcutt autoregressive technique, AR(1), was employed.

Convergence was attained after 92 iterations with 24 included observations after adjustment in time period (1981 - 2020). The final results are as shown on Table 4.3:

Table 4.3: OLS Regression Result of Banking Sector Credit and Economic Growth

Dependent Variable	Independent Variables	Coefficient	t-Statistic	Probability
RGDP	C	23905065	0.025220	0.9800
	PSC	-96.77174	-2.945034	0.0059
	ABKC	58.92173	2.437892	0.0203
	INFR	-107.0622	-0.108141	0.9145
	TOPN	724.8942	0.367339	0.7157
	AR(1)	0.998421	15.71214	0.0000
R^2	0.796025			
Adjusted R^2	0.765120			
F-statistic	25.75692	Prob(F-stat)	0.000000	
Durbin-Watson	1.548422			

Source: Results Extracted from E-VIEWS 8.0 output, (2021).
* denotes significance @ 5% level

Table 4.3 reports the multivariate regression using Ordinary Least Squares (OLS) technique. The R^2 of 0.796025 indicates that about 79% of total variation in the dependent variable (RGDP) is accounted for by the explanatory variables (i.e., PSC, ABKC, INFR and TOPN). This result remains robust even after adjusting for the degrees of freedom (df) as indicated by the value of adjusted R^2, which is 0.765120 (i.e. ≈ 76%). Thus, the regression has a good fit. The F-statistic, which is a test of explanatory power of the model is 25.76 with the corresponding probability value of 0.0000, is statistically significant at 1%. Therefore, this implies that the four explanatory variables (PSC, ABKC, INFR and TOPN) have joint significant effect on economic growth in Nigeria using Real

Gross Domestic Product (RGDP) as a proxy for economic growth. The Durbin-Watson statistic of 1.55 indicates we can completely rule out autocorrelation.

The coefficient of private sector credit (PSC) is found to be negative and statistically significant at 1% with t-statistic of -2.945034 and its corresponding probability value of 0.0059. The coefficient of aggregate bank credit (ABKC) is correctly signed (i.e., positive) and there was sufficient evidence for its significance at 1% as indicated by the t-statistic of 0.0203 with corresponding probability value of 0.0203. The coefficient of inflation rate (INFR) was correctly sign but was not statistically significant as indicated by the t-statistic of -0.108141 with corresponding probability value of 0.9145. Finally, the coefficient of trade openness (TOPN) is correctly signed (i.e., positive) but fail the significance test at 5% as indicated by the t-statistic of 0.367339 with corresponding probability value of 0.7157.

4.5 Pairwise Granger Causality Test

The pairwise granger causality test is to check the direction of causality among the variables. Here, we present the main results obtained from the Pairwise Granger-causality analysis done in the study. Ten pairs of variables were modeled as seen in Table 4.5. The results from the granger causality test (in two lags) indicate that bidirectional causality exists between private sector credits (PSC) and economic growth (RGDP) at 1% significance level, hence, Bank credit to private sector granger causes economic growth, economic growth granger Causes bank credit to private sector.

Table 4.5 Results of Pairwise Granger Causality Test (Lags 2)

Null Hypothesis:	Obs	F-Statistic	Prob.
PSC does not Granger Cause RGDP	38	6.54455	0.0040
RGDP does not Granger Cause PSC		8.19488	0.0013
ABKC does not Granger Cause RGDP	38	1.95181	0.1581
RGDP does not Granger Cause ABKC		0.90087	0.4160
INFR does not Granger Cause RGDP	38	0.01859	0.9816
RGDP does not Granger Cause INFR		0.35310	0.7051
TOPN does not Granger Cause RGDP	38	0.25512	0.7763
RGDP does not Granger Cause TOPN		0.91165	0.4117
ABKC does not Granger Cause PSC	38	1.65064	0.2074
PSC does not Granger Cause ABKC		1.75906	0.1880
INFR does not Granger Cause PSC	38	0.78020	0.4666
PSC does not Granger Cause INFR		1.03195	0.3675
TOPN does not Granger Cause PSC	38	1.00812	0.3759
PSC does not Granger Cause TOPN		0.79711	0.4591
INFR does not Granger Cause ABKC	38	0.62224	0.5429
ABKC does not Granger Cause INFR		0.95339	0.3958
TOPN does not Granger Cause ABKC	38	0.66795	0.5196
ABKC does not Granger Cause TOPN		0.80524	0.4556
TOPN does not Granger Cause INFR	38	0.22574	0.7991
INFR does not Granger Cause TOPN		3.54364	0.0404

Source: Results Extracted from E-VIEWS 8.0 output, (2021).

The result of the causality test also shows Uni-directional causality exists between inflation rate and trade openness at 5% significance level but there is no evidence of reverse causality. No causality exists between the remaining pairs of variables.

4.6 Hypotheses Testing

In this section, the working hypotheses of the study are tested based on the outcome of the results from the estimated models of the study. The hypotheses are tested using the coefficients estimated in the empirical analysis using the ordinary least square regression.

Hypothesis One

$H0_1$: Private sector credit has no significant effect on economic growth in Nigeria.

Decision Rule: Private sector credit (PSC) with t value above 2 and probability value of 0.0000 < 0.01, as shown in table 4.3. We reject the null hypothesis which states that private sector credit has no significant effect on economic growth in Nigeria. Therefore, the alternative hypothesis which states that private sector credit has significant effect on economic growth in Nigeria is accepted.

Hypothesis Two

$H0_2$: Aggregate bank credit has no significant effect on economic growth in Nigeria.

Decision Rule: Aggregate bank credit (ABKC) with t value above 2 and probability value of 0.0203 < 0.05, as shown in table 4.3. We reject the null hypothesis which states that aggregate bank credit have no significant effect on economic growth in Nigeria. Therefore, the alternative hypothesis which states that aggregate bank credit have significant effect on economic growth in Nigeria is accepted.

Hypothesis Three

$H0_3$: Bank credit (private sector credit and aggregate bank credit) do not Granger-cause economic growth in Nigeria or economic growth does not Granger-cause bank credit in Nigeria

Decision Rule: Private sector credit (PSC) with F- statistics above 2 and probability value of 0.0040 < 0.01, and Economic growth (RGDP) with F- statistics above 2 and probability value of 0.0013 < 0.01, as shown in table 4.5. We reject the null hypothesis which states that private sector credit do not Granger-cause economic growth in Nigeria or economic growth does not Granger-cause private sector credit in Nigeria. Therefore, the alternative hypothesis which states that private sector credit Granger-cause economic growth in Nigeria or economic growth Granger-cause private sector credit in Nigeria.

Aggregate bank credit (ABKC) with F- statistics less than 2 and probability value of 0.1581> 0.05, and Economic growth (RGDP) with F- statistics less than 2 and probability value of 0.0013 > 0.4160, as shown in table 4.5. We reject the alternative hypothesis which states that aggregate bank credit Granger-cause economic growth in Nigeria or economic growth Granger-cause aggregate bank credit in Nigeria. Therefore, the null hypothesis which states that aggregate bank credit does not Granger-cause economic growth in Nigeria or economic growth does not Granger-cause aggregate bank credit in Nigeria.

4.7 Discussion of Findings and Policy Implications

The results from the empirical analysis are far reaching and have vital policy implications. The empirical results show that the two of banking sector credit variables, that is, Private sector credit (PSC) and aggregate bank credit (ABKC) were statistically significant at the 1% and 5% level respectively. This implies that PSC and ABKC have significant effect on economic growth in Nigeria. However, the relationship between PSC and economic growth is negative. This contradicts the a priori expectation. By this, a unit increase in PSC reduces economic growth (RGDP) by -96.77 units. This, therefore, indicates that PSC has not enhance economic growth in the Nigerian economy for the period studied. The reason that could be attributed for this is the excessive credit growth to private sector which could lead to high economic volatility and probability of financial crisis. This result can also be attributed to the high credit volume which is generally related to potential resource misallocation by the private sector. This result signals the need for the effective control of credit to private sector in order to improve economic growth. On the other hand, the relationship between aggregate bank credit and economic growth is positive. By this, a unit increase in aggregate bank credit increases the level of economic growth (RGDP) by 58.92 units. This result indicates that aggregate bank credit have played a pivotal role in the growth of the Nigerian economy. This finding is consistent with Akujuobi and Nwezeaku (2015); Marshal et al. (2015); Igyo, Simon and Lorlumun (2016) as well as Makinde (2016) who found a significant relationship between bank credit and economic growth. The findings is however inconsistent with Ekpenyong and

Aecha (2011); Azeez and Oke (2012) and Odofuye (2017) who found an insignificant relationship between bank credit and economic growth.

In terms of the control variables (inflation rate and trade openness), the empirical result revealed that inflation rate has a negative and insignificant effect on economic growth. This is constituent with a priori expectation. The import of this result is that a unit increases in inflation rate reduces the level of growth in Nigerian economy by -107.06 units. This means, increasing inflation will reduce economic growth in Nigeria. Also, trade openness has a positive and insignificant effect on economic growth. This is in line with a priori expectation. The granger causality test result indicates bidirectional causality between PSC and RGDP. This means, PSC and RGDP improves each other. However, no causal link was found between aggregate bank credit and RGDP. This implies that the two variables do not stimulate each other.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECCOMENDATIONS

5.1 Introduction

This chapter focuses on the summary of findings from the empirical analysis as well as the conclusion. The policy recommendations dictated by these findings are then presented.

5.2 Summary of Findings

This study examines the effect of bank credit on economic growth in Nigeria. Bank credit was proxy with private sector credit and aggregate bank credit while the indicator for economic growth was Real Gross Domestic Product. Since we are using time series data, the population of the study comprises of all the Banks in Nigeria. The entire population also constitute the sample. The study utilized secondary data which was collected from the Central Bank of Nigeria (CBN) Statistical Bulletin 2020. The period of study was from 1981 – 2020. The multivariate ordinary least square analysis was employed to examine the effect of bank credit on economic growth in Nigeria. The empirical results show that Private sector credit (PSC) and aggregate bank credit (ABKC) was statistically significant at the 1% and 5% level respectively. In terms of the control variable (inflation rate and trade openness), the empirical result revealed that inflation rate and trade openness does not exerts a significant effect on economic growth in Nigeria. Also, a bi-directional causal link was found between PSC and RGDP; while no causal link exists

between ABKC and RGDP. Specifically, the following findings were made from the empirical analysis:

(i) Private sector credit has a negative and significant effect on economic growth in Nigeria;

(ii) Aggregate bank credit has a positive and significant influence on economic growth in Nigeria;

(iii) private sector credit Granger-cause economic growth in Nigeria or economic growth Granger-cause private sector credit in Nigeria while that aggregate bank credit does not Granger-cause economic growth in Nigeria or economic growth does not Granger-cause aggregate bank credit in Nigeria.

(iv) Inflation rate has negative and insignificant effect on economic growth in Nigeria;

(v) Trade openness has positive and insignificant effect on economic growth in Nigeria.

5.3 Conclusion

This research sets out to empirically investigate the effect of bank credit on economic growth in Nigeria for the period 1981 – 2020, using descriptive statistics, correlation analysis and multivariate ordinary least square (OLS) regression techniques. Overall, findings from the study seem to provide evidence that bank credit (private sector credit and aggregate bank credit) has a significant effect on economic growth in Nigeria. From

the foregoing, the study concluded that bank credit play a pivotal role in the growth of the Nigerian economy for the period studied.

5.4 Recommendations

Based on the empirical findings of this study, the following policy recommendations are suggested for policy action:

(i) Government should ensure strict regulatory measures through the use of its monetary policies to regulate the banking sector. The Central Bank of Nigeria, through the use of its credit control instruments should regulate the interest rates to enable the private sector borrow at a moderate rate thereby enhancing investment, which in turn leads to economic growth.

(ii) The achievement of financial sector stability is fundamental to the maintenance of macroeconomic stability, which is sine qua non for sustainable growth and development. Therefore, the monetary authorities and other financial institutions should be strengthened in their regulatory frame work and capacity to maintain financial stability and bank sector reforms

(iii) The regulatory and supervisory framework should be further strengthened, healthy competition promoted among banks and interest rate policy should be made to stimulate investors to borrow and participate in productive activities which have a spillover effect on Nigeria economic growth. Also, policies towards

deepening the financial sector and enhancing the health status of banks should be vigorously pursued.

(iv) The Central Bank of Nigeria should continue with its banking sector reforms and encourage substantial credit allocation to the prioritized private sector. This will help to promote employment generation and economic growth.

(v) Regulatory bodies should put in place periodic monitoring to ensure compliance with bank reforms code of corporate governance. Stress test on banks by the CBN should be more frequent and periodic.

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APPENDIX

DATA FOR THE REGRESSION

YEAR	RGDP	PSC	ABKC	INFR	TOPN
1981	205,222.06	8.57	8.58	21.42	16.48
1982	199,685.25	10.67	10.28	7.16	12.24
1983	185598.14	11.67	11.09	23.22	10.07
1984	183,562.95	12.46	11.50	40.71	9.55
1985	201,036.27	13.07	12.17	1.0	9.77
1986	205,971.44	15.25	15.70	13.7	7.36
1987	204,806.54	21.08	17.53	9.7	19.33
1988	219,875.63	27.33	19.56	61.2	16.43
1989	236,729.58	30.40	22.01	44.7	21.19
1990	267,549.99	33.55	26.00	3.6	31.14
1991	265,379.00	41.35	31.31	23.0	35.40
1992	271,365.52	58.12	42.74	44.8	38.33
1993	274,833.29	127.12	65.67	61.3	30.53
1994	275,450.56	143.42	94.18	76.88	20.92
1995	281,407.40	180.00	144.57	51.6	58.92
1996	293,745.38	238.60	169.44	14.3	49.54
1997	302,022.48	316.21	385.55	10.2	50.77
1998	310,890.05	351.96	272.90	11.9	34.63
1999	312,183.48	431.17	322.76	0.2	38.65

2000	329,178.74	530.37	508.30	14.50	42.49
2001	356,994.26	764.96	796.16	16.50	39.66
2002	433,203.51	930.49	954.63	12.20	28.74
2003	477,532.98	1,096.54	1,210.03	23.80	38.85
2004	527,576.04	1,421.66	1,519.24	10.00	38.04
2005	561,931.39	1,838.39	1,976.71	11.6	45.12
2006	595,821.61	2,290.62	2,524.30	8.50	36.40
2007	634,251.14	3,668.66	4,813.49	6.60	37.04
2008	672,202.55	6,920.50	7,799.40	15.10	40.81
2009	718,977.33	9,102.05	8,912.14	12.00	31.81
2010	775,525.70	10,157.02	7,706.43	11.80	37.22
2011	801,442.20	10,660.07	7,312.73	10.30	41.47
2012	59,929.89	14,649.28	8,150.03	12.00	34.99
2013	63,218.72	15,751.84	10,005.59	8.00	30.79
2014	67,152.79	17,131.45	12,889.42	8.00	26.39
2015	69,023.93	18,675.47	13,086.20	9.60	21.16
2016	67,931.24	21,082.72	16,117.20	18.60	18.05
2017	70,023.93	22,092.04	15,740.59	15.40	21.80
2018	76,931.24	22,521.95	15,134.20	11.48	20.98
2019	70,023.93	24,922.94	16,251.05	11.98	21.22
2020	76,931.24	26,821.94	17,187.77	13.09	21.26

Source: CBN Statistical Bulletin

REGRESSION RESULT

Dependent Variable: RGDP
Method: Least Squares
Date: 09/07/23 Time: 06:45
Sample: 1981 2020
Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	150627.2	76311.69	1.973841	0.0563
PSC	-83.63041	17.92823	-4.664734	0.0000
ABKC	112.6219	26.20121	4.298345	0.0001
INFR	-1243.538	1389.050	-0.895244	0.3768
TOPN	6249.803	1924.480	3.247529	0.0026

R-squared	0.573559	Mean dependent var	305078.0
Adjusted R-squared	0.524823	S.D. dependent var	210786.3
S.E. of regression	145301.5	Akaike info criterion	26.72748
Sum squared resid	7.39E+11	Schwarz criterion	26.93859
Log likelihood	-529.5496	Hannan-Quinn criter.	26.80381
F-statistic	11.76866	Durbin-Watson stat	0.778211
Prob(F-statistic)	0.000004		

Dependent Variable: RGDP
Method: Least Squares
Date: 09/07/23 Time: 06:48
Sample (adjusted): 1982 2020
Included observations: 39 after adjustments
Convergence achieved after 92 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23905065	9.48E+08	0.025220	0.9800
PSC	-96.77174	32.85929	-2.945034	0.0059
ABKC	58.92173	24.16913	2.437892	0.0203
INFR	-107.0622	990.0250	-0.108141	0.9145
TOPN	724.8942	1973.365	0.367339	0.7157
AR(1)	0.998421	0.063545	15.71214	0.0000

R-squared	0.796025	Mean dependent var	307638.4
Adjusted R-squared	0.765120	S.D. dependent var	212910.7
S.E. of regression	103186.0	Akaike info criterion	26.06709
Sum squared resid	3.51E+11	Schwarz criterion	26.32302
Log likelihood	-502.3083	Hannan-Quinn criter.	26.15892
F-statistic	25.75692	Durbin-Watson stat	1.548422
Prob(F-statistic)	0.000000		

Inverted AR Roots	1.00

Pairwise Granger Causality Tests
Date: 09/07/23 Time: 06:50
Sample: 1981 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
PSC does not Granger Cause RGDP	38	6.54455	0.0040
RGDP does not Granger Cause PSC		8.19488	0.0013
ABKC does not Granger Cause RGDP	38	1.95181	0.1581
RGDP does not Granger Cause ABKC		0.90087	0.4160
INFR does not Granger Cause RGDP	38	0.01859	0.9816
RGDP does not Granger Cause INFR		0.35310	0.7051
TOPN does not Granger Cause RGDP	38	0.25512	0.7763
RGDP does not Granger Cause TOPN		0.91165	0.4117
ABKC does not Granger Cause PSC	38	1.65064	0.2074
PSC does not Granger Cause ABKC		1.75906	0.1880
INFR does not Granger Cause PSC	38	0.78020	0.4666
PSC does not Granger Cause INFR		1.03195	0.3675
TOPN does not Granger Cause PSC	38	1.00812	0.3759
PSC does not Granger Cause TOPN		0.79711	0.4591
INFR does not Granger Cause ABKC	38	0.62224	0.5429
ABKC does not Granger Cause INFR		0.95339	0.3958
TOPN does not Granger Cause ABKC	38	0.66795	0.5196
ABKC does not Granger Cause TOPN		0.80524	0.4556
TOPN does not Granger Cause INFR	38	0.22574	0.7991
INFR does not Granger Cause TOPN		3.54364	0.0404

	RGDP	PSC	ABKC	INFR	TOPN
Mean	305078.0	5877.574	4306.979	19.54100	29.63850
Median	269457.8	647.6650	652.2300	12.10000	30.96500
Maximum	801442.2	26821.94	17187.77	76.88000	58.92000
Minimum	59929.89	8.570000	8.580000	0.200000	7.360000
Std. Dev.	210786.3	8591.324	5884.684	17.79386	12.51935
Skewness	0.870342	1.207448	1.067211	1.720078	0.072590
Kurtosis	2.839147	2.930818	2.595193	5.096439	2.339543
Jarque-Bera	5.093095	9.727512	7.866046	27.04956	0.762135
Probability	0.078352	0.007721	0.019584	0.000001	0.683132
Sum	12203119	235103.0	172279.1	781.6400	1185.540
Sum Sq. Dev.	1.73E+12	2.88E+09	1.35E+09	12348.23	6112.632
Observations	40	40	40	40	40

	RGDP	PSC	ABKC	INFR	TOPN
RGDP	1.000000	-0.337314	-0.247172	-0.115912	0.508492
PSC	-0.337314	1.000000	0.488038	-0.286457	-0.175863
ABKC	-0.247172	0.988038	1.000000	-0.305201	-0.149488
INFR	-0.115912	-0.286457	-0.305201	1.000000	-0.074809
TOPN	0.508492	-0.175863	-0.149488	-0.074809	1.000000