

**FINANCIAL DEEPENING AND ECONOMIC GROWTH IN  
NIGERIA: AN EMPIRICAL INVESTIGATION**

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**ABSTRACT:** This study investigated the effects of financial deepening on economic growth in Nigeria. An empirical review of relevant literature shows a corresponding interaction between key economic variables that has the ability to exert effort on the policies of government to target major indicators that drives growth. The essential variables for this study are Per Capital Income, Broad Money Supply, Private Sector Credit, Financial Savings and Inflation. Secondary data were sourced from the Central Bank of Nigeria and World Bank from a scope of 1981 to 2018 for this work. The study adopted statistical analysis of Ordinary Least Square Regression method, supported with Unit Root, Heterocedasticity, Vector Error Correction Mechanism, Descriptive, Johansson Co-integration, and Correlation Matrix to test the stationarity, normality and long run relationships between variables. Some of the variables show significant influence on economic growth from the analysis thereby, giving credence to positive relationship between financial deepening and economic growth. Findings indicated that, the ratio of money supply to Gross Domestic Product has positive significant effects on per capita income. Inflation on the other hand has a negative significant influence on per capita income both at the short and long-run, while financial savings and private sector credit to Gross Domestic Product has insignificant negative and positive relationship with per capita income in the short-run respectively. These results support supply leading and demand following hypotheses theories that suggest financial deepening triggers economic growth. The implication of the study shall provide a sound financial deepening road map to economic policy makers; enhancing all inclusive financial development through Government fiscal and monetary policy measures. It will give a better understanding of the working dynamics of macroeconomic variables that has the ability to influence the economic well being of the citizens. The study recommended that, Government should implement flexible economic policies to enhance broad base financial market development to increase liquid and non liquid monetary instruments. Financial regulatory authorities should use inflation targeting tool instrument as financial deepening fiscal policy measure. Economic policy managers should institute a flexible financial inclusion policy frame work to drive effective financial savings dominance on economic growth

**Keywords:** Financial Deepening, Economic Growth, Per Capital Income, Broad Money Supply, Private Sector Credit, Financial Savings, Inflation.

## INTRODUCTION

Financial deepening is a fundamental role of financial intermediaries' activity to effectively mobilize domestic savings for investment purposes under the supervision of Government financial regulations. The growth of domestic savings provides the real structure for the creation of diversified financial claims. Financial deepening generally entails an increased ratio of money supply to Gross Domestic Product (Popiel, 1990; Nnanna, 2004). The sum of all the measures of financial assets gives us the approximate size of financial deepening.

China has achieved the highest economic growth in the world over the past two decades (Zongyi Zhang, 2020). Unlike many previous studies, it explores the relationship between financial deepening and real per capita GDP using both panel and time series data for the period under study. Indicators of financial deepening differ in economies and between countries. It is also possible that, different financial markets have different levels of financial deepening, for example, the countries that have efficient financial systems have higher financial deepening ratios. The share of assets in gross national product (GNP) of developed countries' financial markets is greater than that of the developing countries (Jovanovic, 1990).

Granger causality test was carried out within a Johansen-type error correction framework, from the evidence, finance is a leading sector in the process of economic growth. However, the long-run evidence supports the view of bi-directionality: Finance causes economic growth, which, in turn, leads to further financial deepening. The analysis has useful policy implications on the growing economies.

The financial system has been acknowledged globally to play a catalytic role in the economic growth of nations (Sanusi, 2009). It plays a pivotal role in the mobilization and allocations of savings for productive use, provides structures for asset management, which is the basis for managing liquidity in the financial system. It also assists in minimizing the risks faced by firms and businesses in their productive processes, improvement of portfolio diversification and hedging the economy from the vicissitudes of international uncoordinated economic changes.

The increasing deepening and expansion of the financial system is expected to lead to increased variety of financial instruments not only in the banking subsector but also in the capital market. Greater availability of varieties of financial institutions and instruments is expected to deepen the financial system. Financial deepening can be measured using several kinds of indices. A few of these are: the ratio of growth rate of broad money supply (M2) to that of the gross domestic product; ratio of total banking assets to gross domestic product GDP, gross savings in the economy to GDP, gross domestic investment to GDP as well as interest rate spread. (e.g. the difference between lending rate and deposit rate). The more deepened the financial system, the more expanded the level of output and the rate of growth of output in an economy.

Goldsmith (1969) motivated his path breaking study of finance and growth as follows:

“One of the most important problems in the field of finance, if not the single most important one is the impact financial structure has on economic development.”

Economic growth cannot be possible without the combined role of investment, labour and financial deepening (Ndebbio, 2004). Though Economists have accepted effects of financial deepening on economic growth, they have not had the same idea about the direction of causality, which means whether financial development causes economic growth or economic growth causes financial development. For instance, Hicks (1969), Shaw (1973), support that financial development causes economic growth, that is, financial deepening is a prerequisite for economic growth.

This hypothesis is usually labelled “supply leading” since it postulates that the presence of efficient financial markets increases the supply of financial products and services in advance of the demand for them in the real sector of the economy. In contrast to this opinion, Robinson (1952), and Patrick (1966), opined that in the existence of same type of financial regulations, economic growth creates a demand, and financial system gives an automatic response to this demand which causes financial system development.

They argue that financial deepening is merely a by-product or an outcome of growth in the real sector of the economy. This is called the “demand-following” hypothesis since financial markets develop and progress following the increased demand for their services from the growing economy. Theoretically, financial development creates enabling conditions for growth through either a supply leading (financial development spurs growth) or a demand following (growth generates demand for financial products channel).

The reforms in the financial system in Nigeria evolved through the 1986 deregulation that affected the level of financial deepening in the country and its relevance to the financial system on economic development (Nnanna & Dogo, 1998). However, the rapid globalization of the financial markets since then and the increased level of integration of the Nigerian financial system to the global system have generated interest on the magnitude of financial deepening that has occurred.

Nigeria has experienced some development in the financial sector and consequently increases in financial deepening over time. Growth in financial outlet, development in the money and capital market, increases in stocks, and increases bank branches, rapid use of credit and debit cards, increasing e-banking, and increase in total deposits, (Luis, 2009),

### **Statement of the Problem**

According to scholars in financial economic literature, it's been discovered that financial deepening enhances enormous economic growth like, Monogbe, Nduka and Needam (2016), Nnachi and Udude (2017), (Karimo and Ogbomo, (2017). Karahan and Yilgor ( 2015) supported the positive influence of financial deepening on economic growth.

However, other scholars like Nduka and Needam (2016). Drambi, Adzu, Samson and Lugu (2015), suggested a negative effect on economic growth. The short comings in evaluating financial deepening on economic growth shows the results only display the overall financial growth within the economy on a microscopic view because, it does not reveal the actual living

standard of the populace in the economy. Consequently in a view to ascertain the real human capital development index as a function of the standard of living therefore, triggers the fundamental cause and effect element of growth as a determiner comes to play.

However, the pivot of the study is to investigate the effect of financial deepening on economic growth. Other studies adopted gross domestic product (GDP) or Real gross domestic product (RGDP) to represent economic growth like, (Ndalu, 2016; Nnachi and Udude, 2017). The work of the said scholars does not essentially disclose full economic growth and as a result, this study adopted per capital income (PCI) to represent Dependent variable which better explain the effective impact on the living standard of the citizens in a nation. We derive this by dividing the country's national income by her population. Incontrovertibly, this study seeks to fill this gap with a proper dimensional cause and effect variable adequately adopted.

There are numerous figures and publications relating to economic growth in GDP per quarter in Nigeria whereas, in actual fact, it's a mirage because no meaningful and physical growth has been made in sight. This is because Nigeria is still undergoing progressive economic development with major human development performance parameters index lacking.

The Nigeria nation still have high profile unemployment, poor education, social security breakdown, poor medical facilities and low technological knowhow to drive other associated support services. Growth does not happen in isolation without a corresponding cause and effect evidence on economic growth of any Nation. This work will further help to clear every doubt inherent in the existing literature and sharpen the direction of causality between financial deepening and economic growth.

### **Objectives of the Study**

The broad objective of the study is to ascertain the effects of financial deepening on economic growth in Nigeria whereas, the specific objectives are:

1. To examine the effects of money supply to gross domestic product ratio on per capital income in Nigeria.
2. To Determine the impact private sector credit to GDP has on per capita income in Nigeria
3. To investigate the influence of financial savings to GDP on per capital income in Nigeria
4. To determine the impact of inflation rate on economic on per capita income in Nigeria

The study was hypothesized below in accordance with the research objective above as follows:

### **Research Hypotheses**

**H1:** Money supply to GDP ratio has no significant effect on economic growth in Nigeria.

**H2:** Private sector credit to GDP does not have significant effect on economic growth in

**H3:** Inflation rate has no significant effect on economic growth in Nigeria.

**H4:** Financial savings to GDP ratio does not have significant impact on economic growth in Nigeria

## **REVIEW OF RELATED LITERATURE**

### **Conceptual Framework**

The concept of financial deepening simply refers to increase in the percentage of money supply to gross domestic product of a nation. This is also called liquid money, economic growth and development of a nation is a function of financial deepening. It also means the supply of financial assets into the economy.

These further assert the fundamental role of a deposit money bank in Nigeria as a catalyst or rather power house that accumulates these financial assets all over the world. The associated gap of intermediation between the savers and the investors has been successfully closed by the banks which act as a channel of distribution and accumulation of funds.

Ndebbio (2004) defined financial deepening as the ability of financial institutions to efficiently mobilize savings for the purpose of investment in an economy. This concept of decomposing the independent variable brought about the selection of four key macroeconomic indicators to underpin the study and better understand the issues surrounding the cause and effects between financial deepening and economic growth in Nigeria.

### **Broad Money Supply (m2)**

This the most inclusive method of calculating a given country's money supply. The eventual increase in money supply occasioned by efficient financial deepening measure through e-banking and technology enhance policy will be evident in the totality of assets available to households and businesses for make payments. It also comprises of short-term investments like currency, mutual funds, capital and money market securities, cash at hand and bank accounts, anything of value near or resembling money represent the total liquidity which determines economic growth. .

### **Domestic Credit to Private Sector**

This refers to financial resources provided to the private sector by financial corporations, through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment

### **Financial Savings to GDP**

Represents another variable as a component of the study which is known to be income not spent, or deferred consumption. Methods of saving include depositing money with the bank, for

example, a deposit account, a pension account, an investment or mutual fund, or as cash. Savings also involves reducing expenditures, such as recurring costs.

### **Per Capita Income (PCI)**

Per capital income measures the average income earned per person in a given area (city, region, country, etc.) in a specified year. It is calculated by dividing the area's total income by its total population. This is a measure of how well nation is doing in terms of basic human needs in a country. It could be similar to human development index of the citizenry in an economy with reference to employment availability, health, food social intervention facility, security and education etc.

### **Inflation**

Inflation is an indicator of the cost of doing business in an economy and it's adopted in this study as a control variable to others. High inflation rate affect the efficiency of banking system, it is calculated as the annual percentage change in consumer price index (CPI). It is also a situation where there is significant and sustained rise in the general price level of goods and services in an economy.

Beck, Levine and Loayza (2000) opines that financial development has a large and positive influence on total productivity of a nation that will translate into GDP growth. The issue with the other studies is because positive relationship between financial development and growth can occur for different reasons. When productivity increases the demand for financial product and services increases too which in turn translate into financial growth. Nnanna and Dogo, (1998) emphasized that, the more liquid money is available in the economy, the more opportunities for growth.

Ndebbio (2004) argued that financial sector development is usually measured by two basic quantitative indicators known as monetization and intermediation ratio. Whereas monetization ratio includes money-based indicators or liquid liabilities like broad money supply to GDP ratio, intermediation ratio consist of indicators concerning bank-based measures like bank credit to the private sector and capital market-based measures such as capitalization ratio of stock market.

Bencivenga and Smith (1999), assert that the banking sector, which is the main source of credit to the private sector is an important channel of financial intermediation through which financial resources can be mobilized for productive investment needed for the realization of the high economic growth.

### **Theoretical Framework**

This study is hinged on Keynesian and McKinnon theory of financial deepening. Keynesian asserts that financial deepening occurs as a result of an expansion in government expenditure. An increase in government expenditure through domestic or external borrowings increases aggregate demand and income thereby raising demand for money. Mckinnon (1973), opined that, financial

markets develop and progress as a result of increased demand for their services from the growing real sector to trigger improved consumer price index.

Assumptions of this study is based on the seminar work of McKinnon and Shaw (1973) who explained the role financial institutions play in economic development and demonstrated that development of the financial sector is a catalyst for economic growth.

According to McKinnon's model (1973), investment cannot be triggered unless sufficient savings is mobilized in the form of bank deposit liabilities which eventually leads to economic development. McKinnon and Shaw (1973) later identified two theories of financial deepening which are liberalization and repression.

The theory of liberalization explains that financial markets allows financial deepening which reflects an increasing use of financial intermediation by savers and investors as well as the monetization of the economy. The theory explains that the higher the rate of interest, the greater the degree of financial deepening. This theory encourages the expansion of the financial markets as a result of higher rate of interest which contributes to economic growth

The theory of repression on the other hand, explains how government intervenes in the financial intermediation to determine the financial prices. The main characteristics of financial repression are interest rate control, restriction of capital account movement, entry restriction to financial market and so on. The intervention of government encourages mostly the borrowers to borrow as much as they can in order to invest into their choice projects which in turn promote economic development.

Gurley and Shaw (1960), developed the theory of financial intermediation and advocates that intermediation plays a very crucial role in the development process by transferring financial resources from the net savers to net borrowers, thereby influencing investment. When these financial resources are transferred, it enhances the financial capacity of the borrowers in the savings and investment process by improving the quality and standard of living of the populace, resulting on economic growth

More so, the relationship between financial deepening and economy has been viewed in three different ways according to Patrick (1966), such as supply leading hypothesis, demand following hypothesis and the development hypothesis. Supply leading hypothesis supports a positive impact of financial development on economic growth, which implies that financial development impacts on the level of development in any economy whereas demand following hypothesis explains that financial deepening response to changes in the real sector. As the real sector grows, the increasing demand for financial services contributes to economic growth. On the other hand, development hypothesis believes that the lack of a developed financial infrastructure restricts economic development.

Therefore, the above views are supported by the development hypothesis since it ensures that the financial system operates efficiently such that the real sector will receive the necessary support. Therefore, the study adopts the development hypothesis because growth cannot happen in

isolation without real private and public sector development in an economy. What translates to growth are the positive influence of development in the economy of a nation.

### **Development Theory**

The term development to refer to economic growth evolved in the United States beginning in the 1940s and in association with a key American foreign policy concern. Sigmund Freud, Erik Erikson, Jean Piaget, and Lawrence Kohlberg, describe development as a series of stages. A Stage is a period in development in which people exhibit typical behavior patterns and establishes particular capacities. While explaining these findings, more subtle theories have explored precise mechanisms whereby inequality might adversely affect development. Financial market imperfections are often at the core of this line of thought because inequalities persist because of these imperfections.

Galor and Zeira (1993) opined that financial market bottle necks is the reason while the vulnerable people couldn't invest in respective of their high marginal propensity of investment. In Banerjee and Newman's model (1993), individual occupational choice is limited by their initial endowments. The structure of occupational choices whether people can become entrepreneurs or have to remain wage earners in turn determines how much they can save and what risks they can bear, with long-run implications for growth and income distribution. Hence, these models show that lack of access to finance is a critical mechanism for generating persistent income inequality or poverty traps and lower economic growth

### **Redistribution and Development Theory**

Development and redistribution of wealth can foster growth. Indeed, this has been the main policy conclusion drawn by many readers of these theories. This thinking rationalizes a focus on redistributive public policies such as land or education reform. However, if it is the capital market imperfections that lead to these relationships and necessitate redistribution, why neglect policies that might remove capital market imperfections? Nevertheless, some theories take credit constraints or other frictions as exogenous. In others static information and transaction costs endogenously yield adverse selection and moral hazard frictions that impede the operation of financial markets. In either case, researchers take capital market imperfections as given and suggest different redistributive policies to promote growth.

This is true even though the literature also notes that if financial market imperfections continue to exist, absence of a virtuous circle may also necessitate permanent redistribution policies. A more effective and sustainable development approach would directly address financial market imperfections, without causing adverse incentive effects. Most redistributive policies create disincentives to work and save, although the economic magnitudes of these disincentive effects are a subject of intense debate (Aghion and Bolton 1997).



### **Empirical Review**

Tari and Oliver (2017), investigated financial deepening and economic growth nexus in Nigeria. Supply are leading and demand following. The study examined the direction of causality between financial deepening and economic growth in Nigeria for the period 1970–2013. The study adopted the Toda–Yamamoto augmented Granger causality test and results showed that, the growth-financial deepening nexus in Nigeria follows the supply-leading hypothesis. This means it is financial deepening that leads to growth and not growth leading financial deepening. Among other things, the study recommended that policy efforts should be geared towards removing obstacles that undermine the growth of credit to the private sector, and must restore investors' confidence in the stock market operations

Nwafor, Aremu, Isreal (2017), examined economic impact of financial deepening in Nigeria. This research work focused on the economic impact of financial deepening in Nigeria. Obtained data spanning from 1997 to 2016 was presented and analyzed in a line chart and with two-staged least squares regression method respectively. After subjecting the hypothesis under testing, result showed that financial deepening has significant impact on economic growth. Observations from data presentation also revealed that financial deepening has been increasing marginally. It was recommended that the tightened access to credit facilities in the country should be loosened up to ensure increased financial deepening

Sin Yu Ho, (2018), assessed the impact of stock market development on growth in Hong Kong for the period 1986Q2 to 2015Q4. By constructing a composite index of stock market development and controlling for the key determinants of growth, we found stock market development to promote growth both in the short and long run. He further constructed an alternative index of stock market development and found this conclusion to be robust. Our findings are broadly consistent with the growth experience of Hong Kong. Policies meant to promote stock market development may enhance growth in Hong Kong as well.

Karimo and Ogbomo (2017) the impact of financial deepening on economic growth nexus. Supplying leading hypothesis. Cointegration. The result showed that the growth of financial deepening nexus in Nigeria follows the supply leading hypothesis.

Nnachi and Udude (2017) estimated the causal relationship between financial development and economic growth. Ratio of broad money to GDP, the ratio of domestic investment to GDP, the ratio of private sector to GDP, the ratio of domestic savings to GDP and gross domestic product. Vector Error Correction Model. The result shows a strong positive relationship between financial development and economic growth.

Waliu (2017) examines financial development and economic growth. GDP growth rate, money-stock to GDP foreign direct investment, export-GDP ratio interest rate. Granger causality test and ordinary least square (OLS). The result showed that a unidirectional causal relationship flow from financial development to economic growth.

Drambi, Adzu, Samson and Ugu (2015) examines the effect of financial deepening on economic development in Nigeria for the period of 1981-2013, the study employs the Cointegration technique vector error correction model. They found a negative relationship between financial deepening and economic development

Ghildiyal (2015) impact of financial deepening on economic growth. Demand leading hypothesis. Granger error correction model. The findings suggest that there exist an equilibrium relationship in long- run between financial deepening and economic development.

Karahan and Yilgor (2015) examine the effect of financial deepening on economic development. Demand leading hypothesis. Vector Autogressive model was used. The empirical findings indicate that there are bidirectional relationship between financial deepening and economic growth. Osuji (2015) examines the causal relationship between financial development and economic growth. Real GDP, money supply to GDP output share of investment total bank liabilities to GDP. The result showed that the direction of causality between financial development and economic growth is sensitive to the choice of proxy used

Nkoro and Uko (2013), examines the financial sector development growth nexus. Real GDP, market capitalization to GDP, broad money stock to GDP ratio, credit to private sector to GDP ratio, prime interest rate, deposit liability. Co-integration and error correction model was adopted to determine the relationship between them. The empirical results reveal that, the financial sector development indicators: stock market capitalization to GDP ratio, interest rate and broad money stock to GDP ratio effectively stimulates Nigeria economic growth.

## **METHODOLOGY**

### **Research Design**

This is an empirical study with ex-post facto research design because the data already exist as no attempt would be made to control or manipulate both variables which are relevant to the study. It aims at determining and measuring the impact between dependent and independent variables: per capita income, broad money supply to GDP, private sector credit to GDP, inflation and financial savings.

### **Sources of Data**

Annual secondary data of the variables were used and they include per capital income, broad money supply, private sector credit, inflation rate and financial savings. All these variables were collected from the central bank of Nigeria statistical bulletin, trade economic.com and World Bank annual report.

### **Operational Description of Research Variables**

The study employed annual data on selected variables from 1981 to 2018. The study adopt per capital income as proxy for economic growth as its dependent variable, while the chosen

independent variables are broad money supply, private sector credit, inflation and financial savings.

### **Variable Explanations**

#### **Per Capita Income (PCI)**

Per Capita Income (PCI) or average income measures the average income earned per person in a given area (city, region, country, etc.) in a specified year. It is calculated by dividing the area's total income by its total population.

Per capita income, also known as income per person, is the mean income of the people in an economic unit such as a country or city. It is calculated by taking a measure of all sources of income in the aggregate (such as GDP or Gross national income) and dividing it by the total population.

#### **Broad Money Supply ( M2GDP)**

Broad money supply to GDP is the most inclusive method of calculating a given country's money supply. The money supply is the totality of assets that households and businesses use to make payments or to hold as short-term investments such as currency, funds in bank accounts and anything of value resembling money. Typically, "broad money" refers to m2

#### **Private Sector Credit (PSCGDP)**

Domestic credit to private sector to GDP refers to financial resources provided to the private sector by financial corporations, through loans, purchases of non equity securities, and trade credits and other accounts receivable, that establish a claim for repayment.

#### **Inflation (INFR)**

This is an indicator of the cost of doing business in an economy, and high inflation rate affect the efficiency of banking system, it is calculated as the annual percentage change in consumer price index (CPI). It is also a situation where there is significant and sustained rise in the general price level of goods and services in an economy.

#### **Financial Savings (FSGDP)**

Savings is income not spent, or deferred consumption. Methods of saving include putting money aside in the bank, for example, a deposit account, a pension account, an investment fund, or as cash. Saving also involves reducing investment and expenditures, such as recurring costs.

### **Model Specification**

The study builds on the work of McKinnon and Shaw (1973) who explained the role financial institutions perform in the country in order to attain economic development. Therefore, this study adopts McKinnon's model which demonstrated that the development of the financial sector is a catalyst for economic growth and posited that investment cannot be triggered unless sufficient savings is mobilized in the form of bank deposit liabilities. This study uses per capita income (PCI) as a proxy for economic growth.

The functional form of the regression made is:

$$PCI = f(M^2/GDP, PSC/GDP, INFR, FS/GDP)$$

Meanwhile, the econometric form of the model is

$$PCI = \beta_0 + \beta_1 M^2S/GDP + \beta_2 PSC/GDP + \beta_3 INF + \beta_4 FS/GDP + \mu$$

Where:

#### **Dependent Variable:**

PCI = Per capita income

#### **Independent variable:**

M2s/GDP = ratio of money supply to gross domestic product

PSC/GDP = Private sector credit to gross domestic production

INFR = Inflation rate

FS/GDP = ratio of financial savings to gross domestic product

$\mu$  = Error term

#### **Estimation Procedure**

The specified multiple regression models were estimated using the Ordinary Least Square (OLS) technique. (OLS) is a method of estimating the unknown parameters in a linear regression model. Hucheson (2011), defined ordinary least square (OLS) regression as a generalized linear modelling technique that may be used to model a single response variable which has been recorded on at least an interval scale. We shall use it in this study because it can be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded.

## ANALYSIS OF RESULT

### Unit Root Test.

In order to determine whether the variable data sets are stationary or otherwise, unit root test were carried out. If not Stationary at levels, the order of integration will be determined. The next is to conduct co-integration test between the dependent and independent variables (Per Capital Income PCI, Broad Money Supply m2 to GDP, Private Sector Credit to GDP, Financial Savings to GDP and Inflation Infr).

The test shows that, the five variables has unit root which has to be cleaned for stationarity as shown below before the data set can be relied upon for economic precision.

**Table 1: Unit Root Summary Result**

Summary of Unit Root Test		
Variables	Prob	Order of Integration
PCI	0.0000	I(1)
M2GDP	0.0066	I(1)
PSCGDP	0.0000	I(1)
INFR	0.0005	I(1)
FSGDP	0.0000	I(1)

**Source: Author's Computation from E-view 8**

### Note:

The results shows that all the variables were not stationary at levels but now stationary at first difference order 1(1) at intercept across board which means the data are now stable and properly fitted for reliable analysis.

### Test of Heterocedasticity

This helps to test the variance of the residuals over a range of measured values in a regression analysis and the variance is expected to be consistent in order to offer a good and reliable results. Therefore, we tested and discovered it was Heterocedastic but however, corrected to be Homocedastic. It also means that the variability of the observed values and the predicted values along the regression line is the same and this can be corrected through Logging of a dependent variable, per capital income PIC as in this case summarized results shown below.

**Table 2 : Summary of Heterocedasticity**

<b>Heteroskedasticity Test: Breusch-Pagan-Godfrey</b>				
F-statistic	2.636643	Prob. F(4,33)		0.0514
Obs*R-squared	9.203244	Prob. Chi-Square(4)		0.0562
Scaled explained	19.64387	Prob. Chi-Square(4)		0.0006

The above summary means the error term which is the noise disturbance in the relationship between the dependent and independent variable are the same across all the values of independence variable.. This is achieved when the ratio of the observed largest variance to smallest variance is 1.5 or below as shown above.

### Co-integration Test

After determining the stationary of the variables, we proceed to test for the co-integration among the them. When co-integration is present, it means that dependent variable which is Per capital income and independent variable that are Broad money supply, Private sector credit, financial savings share a common trend long run equilibrium. We are also interested in the long run effects and relationship of the dependent and independent variables, this is because there are many factors that could alter the directions of the variable and ultimately changes policy program of the result end users. The Johansen co integration test was conducted to test for the presence of a long run relationship between the variables of PCI, M2GDP, PSCGDP, FSGDP and INFR. The decision rule for the acceptance of co integration among the variables is that the trace statistic of the co integration equation must be greater than the 5% critical value.

**Table 3: Johanson co-integration**

<b>Unrestricted Co integration Rank Test (Trace)</b>				
Hypothesized	Trace	0.05		
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
<b>None *</b>	0.765136	124.6465	69.81889	0.0000
<b>At most 1 *</b>	0.644964	72.49151	47.85613	0.0001
<b>At most 2</b>	0.480484	35.21221	29.79707	0.0108
<b>At most 3</b>	0.210658	11.63731	15.49471	0.1752
<b>At most 4</b>	0.083051	3.121317	3.841466	0.0773

**Source: Author's Computation from E-view 8**

From our result above, the trace statistic is 124.6465 which is greater than the 5% critical value of 69.81889. We therefore conclude that there is the presence of long run relationship between the dependent and independent variables. The implication of this is that financial deepening

policy targeting will improved Per Capita Income through economic growth in Nigeria and more focus should be on deepening the financial parameters.

**Vector Error correction Mechanism (VECM)**

This is a mechanism which helps to explains or analyze the speed at which a dependent variable returns to equilibrium after a change in independent variable on a multiple regression equation data set.

**Table 4: Summary of Vector Error Mechanism**

<b>Error Correction:</b>	D(LNPCI)	D(M2GDP)	D(PSCGDP)	D(FSGDP)	D(INFR)
<b>CointEq1</b>	-0.34273	0.428712	1.434349	2.921406	-1.29081
	-0.18016	-1.76078	-0.89609	-0.59252	-3.49834
	[-1.90232]	[ 0.24348]	[ 1.60067]	[ 4.93050]	[-0.36898]
<b>D(LNPCI(-1))</b>	0.716799	6.735098	-2.77442	-5.63388	3.660705
	-0.40233	-3.93208	-2.0011	-1.32318	-7.81229
	[ 1.78161]	[ 1.71286]	[-1.38644]	[-4.25784]	[ 0.46858]
<b>D(M2GDP(-1))</b>	-0.01739	-0.23365	0.098084	0.095369	0.169601
	-0.02089	-0.20413	-0.10389	-0.06869	-0.40557
	[-0.83236]	[-1.14457]	[ 0.94414]	[ 1.38834]	[ 0.41817]
<b>D(PSCGDP(-1))</b>	-0.08092	-1.35853	0.370746	0.765658	-0.48959
	-0.0681	-0.66556	-0.33871	-0.22397	-1.32233
	[-1.18830]	[-2.04119]	[ 1.09457]	[ 3.41864]	[-0.37025]
<b>D(FSGDP(-1))</b>	0.179222	2.741332	-0.74157	-1.49695	1.706771
	-0.10803	-1.05585	-0.53734	-0.3553	-2.09777
	[ 1.65893]	[ 2.59633]	[-1.38008]	[-4.21318]	[ 0.81361]
<b>D(INFR(-1))</b>	-0.00697	-0.09352	-0.01163	-0.00813	-0.03866
	-0.00995	-0.09729	-0.04951	-0.03274	-0.1933
	[-0.69996]	[-0.96130]	[-0.23495]	[-0.24816]	[-0.20002]

**Source: Author’s Computation from E-view 8**

The above table shows that, dependent and independent variables are co-integrated as CointEq1 row which therefore means that 0.34273 speed of changes in independent variable will approximately cause 72% adjustment in per capital income in that corresponding order

**Descriptive Analysis**

Descriptive analysis was used to determine the goodness of fit and how well modeled data set is by a normal distribution and to compute how likely it is for a random variable underlying the data set to be evenly distributed. Essentially the model was formulated according to the specific objective of the research. Variables can be encoded with precision depending on individual

choice of words to better interpret the underlying subject. In descriptive statistics terms, one measures goodness of fit of a normal model to the data. If the fit is poor then the data are not well modelled in that respect by a normal distribution.

**Table 5: Result of Descriptive test**

	PCI	M2GDP	PSCGDP	INF	FSGDP
Mean	822.2693	26.79974	13.56842	17.60000	9.914737
Median	349.4071	24.10000	11.10000	12.05000	8.705000
Maximum	3427.553	52.50000	36.90000	76.70000	25.30000
Minimum	19.95000	2.190000	5.900000	0.220000	3.340000
Std. Dev.	955.8550	11.23336	6.765657	18.85959	5.352352
Skewness	1.611458	0.465740	1.444958	1.715445	1.599028
Kurtosis	4.242629	2.728384	5.133569	5.016356	5.070148
Jarque-Bera	18.89125	1.490598	20.43091	25.07478	22.97904
Probability	0.000079	0.474592	0.000037	0.000004	0.000010
Sumsq	31246.23	1018.390	515.6000	668.8000	376.7600
SumSq.Dev.	33805377	4668.972	1693.642	13160.32	1059.964
Observations	38	38	38	38	38

**Source: Author's Computation from E-view 8**

Descriptive test is a good test of the distribution of error term in the variables. The efficiency and consistency of the result is on the basis of normality distribution of the error terms. Table 1 above explains the descriptive statistical analysis between the dependent variable and the independent variables using mean, standard deviation and variance. Mean is the average value of the series which is gotten by dividing the total value of the series by the number of observations.

From the above, we see that the mean for PCI, M2GDP, PSCGDP, INF and FSGDP are 822.2693, 26.79974, 13.56842, 17.60000 and 9.914737 respectively. The median is the middle value of the series when the values are arranged in an ascending order. From the table above, the median for PCI, M2GDP, PSCGDP, INF and FSGDP are 349.4071, 24.10000, 11.10000, 12.05000 and 8.705000 respectively.

The Standard deviation is a measure of spread or change in the series. From the table above, the standard deviation for PCI, M2GDP, PSCGDP, INFL and FSGDP are 955.8550, 11.2336, 6.765657, 18.85959 and 5.352352 respectively. The above result shows that changes in the independent variable resulted in the corresponding effect on per capita income (PCI).



### Correlation Analysis

Correlation analysis measures the relationship between two variables. When comparing the correlation between two variables, one variable is called the "dependent variable" and the other is called "independent variables". The goal is to see if a change in the independent variable (which is usually an indicator) will result in a change in the dependent variable. This information helps you to understand an indicator's predictive abilities. The correlation coefficient can range between  $\pm 1.0$  (plus or minus one). A coefficient of  $+1.0$ , shows a perfect positive correlation which means that changes in the independent variables will result in a similar change in the dependent variable.

**Table 6: Correlation Matrix**

<b>PCI</b>	1.000000				
<b>M2GDP</b>	0.702122	1.000000			
<b>PSCGDP</b>	0.466298	0.611223	1.000000		
<b>INF</b>	-0.284484	0.079809	-0.203919	1.000000	
<b>FSGDP</b>	0.162990	0.401657	0.863430	-0.159272	1.000000

**Source: Author's Computation from E-view 8**

Analysis of the correlation matrix indicates that all the independent variables (M2GDP, PSCGDP, INF and FSGDP) has a significant positive relationship with Per Capita income (PCI) as shown in table 2 above. This can better be interpreted diagonally from the table, because we can see that, PCI is reading (1.000000) across board on all the explanatory variable M2GDP, PSCGDP, INF and FSGDP. This further explains how strong and positively correlated the variables are.

### Ordinary Least Square Regression Results (OLS)

The existence of long-run co integrating equilibrium provides for short run fluctuations. In order to straighten out or resolve these fluctuations, Ordinary Least Square (OLS) has been applied. The OLS is meant to synchronize the short-run dynamics of the co-integrating equations to their long-run position, and it is used to test the speed of adjustment from the short-run equilibrium to the long-run equilibrium as shown below.

**Table 7: Ordinary Least Square Regression Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	244.8020	383.4144	0.638479	0.5328
M2GDP	90.15836	13.88758	6.492014	0.0000
PSCGDP	28.08111	39.10394	-718115	0.4837
INF	-84.08795	21.92805	3.834720	0.0016
FSGDP	-20.89212	37.64244	0.555015	0.5871
AR(17)	0.034254	0.072949	0.469563	0.6454
R-squared	0.861168	Mean dependent var		1215.283
Adjusted R-squared	0.814890	S.D. dependent var		1142.626
S.E. of regression	491.6080	Akaike info criterion		15.46820
Sum squared resid	3625176	Schwarz criterion		15.76663
Log likelihood	-156.4161	Hannan-Quinn criter.		15.53296
F-statistic	18.60880	Durbin-Watson stat		1.881283
Prob(F-statistic)	0.000006			

Source Author's computation from E-view 8

### Interpretation of Results

From table 7, it can be seen there is long-run relationship between per capita income (PCI) (proxy for economic growth) and the other explanatory variables representing financial deepening. From the analysis, the ratio of money supply to gross domestic product (m2/GDP) has a positive long-run relationship with per capita income (PCI) and statistically significant at the 10%. Which means a unit change in M2GDP will result to 90.15836% positive change in per capita income (Prob value 0.0000). This implies that the ratio of money supply to GDP is a major determinant of per capita income and positively contributes to the per capita income growth in Nigeria in accordance with the theoretical expectation. Private sector credit to GDP has a positive long-run relationship but not statistically significant with PCI at 28.08111%, mean it does not contribute significantly to the economic growth. A unit change in private sector credit to GDP will result to 28.08111 units increase in per capita income (PCI) in Nigeria for the period under review. Inflation rate has a negative short run significant relationship with per capita income. This suggests that inflationary trend has a contractionary impact on the economy.

On the other hand, financial savings to GDP ratio has a negative short and long-run statistically impact on PCI.

The Durbin-Watson Statistics of 1.881283 indicates a good autocorrelation between each successive explanatory variable, hence absence of autocorrelation problem in the model, suggest the model is reliable for economic prediction. The Prob (F-statistics) = 0.000006 indicates that the regression has an overall goodness of fit at 1% level of significance. The adjusted R<sup>2</sup> having adjusted for the degree of freedom and error term was moderate at 491.1 which indicates that

81% of the proportion of variation in dependent variable is predictable from the independent or explanatory variables correctly explained. This also shows how closely fitted the variable will be if placed on a regression line.

### **Test of Hypotheses**

The t-value and P-value formed the basis for acceptance or rejection of the hypotheses. The decision rule shall be to accept alternate hypotheses if the t-value  $\geq 2.000$  and P-value  $\leq 0.05$ . Reject alternate hypotheses if t-value  $< 2.000$  and P-value  $> 0.05$ . Accept null hypotheses if the t-value  $< 2.000$  and P-value  $> 0.05$ . Reject null hypotheses if the t-value  $\geq 2.000$  and P-value  $\leq 0.05$ .

### **Hypothesis One using table 7 above**

**H1: Money supply to GDP ratio has no significant effect on economic growth in Nigeria.**

From the regression result, it is observed that money supply to GDP ratio with an absolute calculated t-value of 6.49 is greater than the critical t-value of 2.0 and statistically significant at 1% level of significance. Therefore, we reject the null hypothesis and accept the alternative hypothesis which states that money supply to GDP ratio has significant impact on economic growth in Nigeria.

### **Hypothesis Two**

**H2: Private sector credit to GDP does not have significant effect on economic growth in Nigeria.** From the regression result, it is observed that private sector credit to GDP with an absolute calculated t-value of -0.718 is less than the critical t-value of 2.0 and is insignificant at 5% level of significance. Therefore, we accept the null hypothesis which states that private sector credit to GDP ratio does not have significant effect on economic growth in Nigeria.

**H3: Inflation rate has no significant effect on economic growth in Nigeria.**

From the regression result, it is observed that inflation rate with an absolute calculated value of 3.8 is greater than the critical t-value of 2.0 and statistically significant at 1% level of significance. Therefore, we accept the alternate hypothesis which states that inflation rate has significant effect on economic development in Nigeria. The negative coefficient sign means that, an increase in inflation will trigger a downward economic growth

**H4: Financial savings to GDP ratio does not have significant impact on economic growth in Nigeria.** From the regression result, it is observed that financial savings to GDP with an absolute calculated t-value of 0.55 is less than the critical t-value of 2.0 and not statistically significant at 5% level of significance. Therefore, we accept the null hypothesis which states that financial savings to GDP ratio does not have significant impact on economic growth in Nigeria

## CONCLUSION, FINDINGS AND RECOMMENDATION

### Conclusion

In conclusion, these results strongly suggest that broad money supply to GDP and inflation had significant influence on per capita income which is a preferred measure of economic growth in both short and long-run in Nigeria within the periods (1981-2018). Furthermore, the results also suggest that financial savings and private sector credit ratio to GDP has insignificant impact on per capita income particularly in the short run but might become significant at the long run.

### Findings

1. The ratio of money supply to GDP has a positive significant effect on per capita income (PCI) both in the short run and long-run.
2. Private sector credit is not statistically significant on PCI in the short-run but, might have significant impact in the long-run.
3. Inflation has a negative and statistically significant effect on PCI both in the short- run and long-run. The negative coefficient sign means a downward economic growth if inflation further increases
4. Financial savings to GDP has a negative relationship with PCI in the short-run but might be positive in the long-run

### Recommendations

- 1), The Government should implement policies to enhance broad base financial market development through increasing liquid and non liquid monetary instruments to drive a vibrant economic growth.
- 2) Deposit money banks should be encouraged to drive private sector credit through SME's and corporate organizations as a positive channel to bolster economic growth and development.
- 3) Inflation targeting tool as a financial deepening measure should remain a major instrument of Government financial policies measure to ensure increase inflationary trend does not continue unabated to further shrink the economy into depression.
- 4) We recommend the Government to institute financial inclusion policy frame work to drive effective financial savings dominance on economic growth.
- 5). The Government should also encourage easy access to financial product and services through credit lines and account opening flexibility.

**REFERENCES**

- Aghion, P, Bacchetta, P, & Banerjee, A. (2004): Financial Development and Ang, J.B. (2007). *Financial Deepening and Economic Development in Malaysia.* Economic Papers, 26 (3), September, 249-260
- Banerjee A.V & Newman A.. F (1993) Financial Development and Income Inequality, [www.researchgate.net/publication](http://www.researchgate.net/publication)
- Barro, R. J. (1995). Inflation and Economic Growth, NBER Working Paper, No. 5326, Cambridge.
- Bencivenga V.R & Smith. B.D. (1999). Does Financial Deepening Creates Financial Crises. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*
- Bruno, M., & Easterly, W. (1995). Inflation Crises and Long-Run Growth: *World Bank Policy Research Working Paper No. 1517*
- Drambi, L.Y., Adzu, L., Samson, R., & Lugu, C.T. (2015). *Financial Deepening and Economic Development of Nigeria: European Journal of Business and Management*, 7(3 3), 23-43
- Fischer, S. (1993). The Role of Macro-economic Factors in Growth. *Journal of Monetary Economics*, 32(3). 148-149.
- Galor O. & Zeira J (1993) Income Distribution and Micro Economics [Easerchgate.net/publication](http://Easerchgate.net/publication).
- Goldsmith R N (1969) Financial Structure and Development. *Journal of Theoretical Economics*.
- Gurley, J., & Shaw, E. (1960). Money in a Theory of Finance. Washington: Brookings.
- Ghildiyal, V., Pokhriyal A.K., & Mohan, A. (2015). Impact of Financial Deepening on Economic Growth in Indian perspective: ARDL bound testing approach to co integration, *Asian Development Policy Review*, 3(3), 49-60.
- Hicks J. (1969) Financial Deepening and Performance of Nigeria Capital Market. *Journal of Economics and Business* 61, 162-171.
- Hutcheson, G.D. (2011) Ordinary Least-Squares Regression. *Dictionary of Quantitative Management Research, SAGE Publications, Thousand Oaks*, 224-228.
- Jovanovic B. (1990) Online Publication on the Positive relationship between Financial Development and Economic Growth.

- Kearney .P & Chowdhury K (1997). Financial Development and Economic Growth in Nigeria. [www.researchgate.net/publication](http://www.researchgate.net/publication).
- Karahan, O & Yilgor, M. (2015). Financial Deepening and Economic growth in Turkey, *Interdisciplinary Journal of Contemporary Research in Business*, 6(3), 5-7.
- Luis (2009) Deepening African Financial Market. *A Journal of Investment for Economic development*.
- Luqman S. (2014). Financial Deepening and Economic Growth in Pakistan: An application of Co integration and VECM Approach. *Interdisciplinary Journal of Contemporary Research in Business*, 5(12), 3 6-40
- Mckinnon, R. I. (1973). Money and Capital in Economic Development. Washington, D.C.: Brookings Institution.
- Michael C. Nwafor 1, Aremu I Y (2017) Examined Economic Impact of *Financial Deepening in Nigeria. Finance*, 3, 192-203 Published: 23 January 2017
- Ndebbio, J.E.U. (2004). Financial Deepening, Economic Growth and Development: *Evidence from selected sub-Sahara African countries, AERC Research Papers No. 142 African Economic Research Consortium, Naira.*
- Ndukwe-Ani, P. A, Madueme, S. I & Nwodo, O .S (2018) Financial Deepening, Private Domestic Savings and Per Capita Gdp Growth in Nigeria *Journal of Economics and Sustainable Development* [www.iiste.org](http://www.iiste.org) ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
- Nkoro, E., & Uko, A.K. (2013). Financial Sector Development and Economic Growth nexus: *Empirical evidence from Nigeria. American International Journal of Contemporary Research*, 3(2), 5-7.
- Nnanna, O. J. and Dogo, M. (1998). Structural Reform, Monetary Policy and Financial Deepening: *The Nigerian Experience, Economic and Financial Review*, Vol. 36 No. 2, June. Pp 1-29
- Nnanna, O.J., Englama, A. and Odoko, F.O. (Ed.). (2004). Financial Markets in Nigeria. *A Central Bank of Nigeria Publication. Abuja: Kas Arts*
- Nwanfor M, Aremu I,(2017) economic impact of financial deepening in Nigeria.
- Nzotta, S.M., and Okereke, E.J. (2009). Financial Deepening and Economic Development of Nigeria: An Empirical Investigation. *African Journal of Accounting, Economics, Finance and Banking Research*, 5(2), 100-115

- Patrick, H. T. (1966). Financial Development and Economic Growth in Underdeveloped countries. *Economic Development and Cultural Change*, 14, 174 — 189.
- Popiel, P.A (1990), Nnanna J, Dogo M, 1999, & Nzotta S.M, 2004). *An Empirical Analysis of Financial Deepening and Economic Growth in Nigeria..*<http://kubanni.abu.edu.ng>
- Robinson, (1952) Finance and Growth: Institutional Consideration and Causality.
- Sanusi, J.O. (2002b): Central Bank and the Macroeconomic Environment in Nigeria.” Lecture
- Shaw E.S (1973) The Macroeconomic Determinants of Stock Market. *A Journal of Theoretical Economics Letters*, Vol.7 No.7, November 27, 2017.
- Sin Yu Ho, ( 2018) Determinant of Economic Growth in Hong kong; The Role of Stock Market, Online at <https://mpa.ub.uni-muenchen.de/88788/> MPRA Paper No. 88788, posted 7 September 2018.
- Tari M K & Oliver Ejike O. (2017) Financial Deepening and Economic Growth Nexus in Nigeria- Supply Leading and Demand following
- Wycliffe, M., Jonathan, M., Tabby O., Ruth, N., & Kitheka, S. (2013) Financial Deepening and Economic Competitiveness in Kenya: The strides to being an Economic Power House, *International Journal of Management & Information Technology*, 6(2), 8 17-825