

# A Causal Analysis of Financial Inclusion and Inclusive Economic Growth in Nigeria

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## Abstract

This study assesses the “causal relationship between financial inclusion (through access and usage of formal financial services) and inclusive economic growth in Nigeria. The study used secondary annual time series data, spanning the period of 1986—2024 and employed Granger Causality test for the analysis. Earlier, all free estimation diagnoses were carried out to ascertain that the data generating process matches the method of analysis employed, which include the unit root tests. The results obtained showed that there is a unidirectional causality running from number of bank branches to inclusive economic growth. Findings further revealed that there is a unidirectional causality running from amount of commercial bank deposits to inclusive economic growth. The results also indicated no causal relationship between commercial bank lending rate and inclusive economic growth. It was also found that there is no causal relationship between commercial bank lending rate and financial usage in Nigeria. Again, the results revealed that there is bidirectional causality between number of bank branches and commercial bank deposits. Thus, the study recommends the need for coordinated action between the banks, government and other stakeholders to facilitate access to bank branches, accounts, and deposits amongst the financially” excluded population.

*Keywords: Financial Inclusion, Access, Usage, Economic Growth, Causality.*

## Introduction

Financial inclusion has drawn a share of consideration all over the world in recent times. Empirical and theoretical evidences have shown that financial inclusion brings about economic growth in many countries of the world, especially in developing economies (Demie Jima & Makoni, 2023; Opoku, Poku, & Domeher, 2024; Siddiki & Bala-Keffi, 2024; Ahiase et al., 2024; Biswas, 2024; among others). Financial “inclusion according to Enhancing Financial Innovation and Access (EFInA, 2021), is simply the provision of a broad range of high quality financial products, such as savings, credit, insurance, payments and pensions, which are relevant, appropriate and affordable for the entire adult population, especially the low income segment. In essence, Pesqué-Cela (2021) defined financial inclusion as the affordable access to a broad spectrum of financial services for all individuals and firms, emphasizing cost efficiency, bankability, and

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diversity of providers. The importance of financial inclusion cannot be overemphasized, as a veritable tool for socioeconomic development. It promises to bring about poverty reduction, employment generation, wealth creation and improving welfare and general standard of living (CBN, 2020; Kamara, 2024). Martinez (2011) identified financial access as an important policy tool that governments employ in fighting and stimulating economic growth given its ability to facilitate efficient allocation of productive resources, thus reducing the cost of capital. Similarly, in a recent study, Alkabbji et al. (2023) report that extending credit facilities to small and medium-sized enterprises, a core aspect of financial inclusion, reduces the cost of capital and improves net income, especially for medium-sized firms. These evidences directly support the notion that financial access enhances productive resource allocation and lowers capital” costs.

Financial inclusion does not stop at access to finance, but affordability of financial products and services is equally important, since the rate of poverty in Nigeria cannot be overlooked. After all, the concept of financial inclusion targets equity in accessing financial products or services. However, it is a well-known and established fact that financial exclusion in Nigeria is deeply entrenched in issues like financial illiteracy, poverty, unemployment, infrastructural deficits, rural inaccessibility, and insecurity (Williams, Okoro, & Bako, 2023; Salami, Hassan, & Oladele, 2024).

Moreover, the affordability of financial services, especially entry costs, transaction fees, and interest rates significantly impacts financial inclusion in Nigeria (CBN, 2022). Despite Nigeria’s claim of having one of the world’s most advanced financial systems, a significant portion of its adult population remains under-banked or entirely unbanked (CBN, 2024). The Nigerian “government through the Central Bank of Nigeria (CBN) launched the National Financial Inclusion Strategy (NFIS) in 2012 with the aim of reducing the rate of financial exclusion from 46.3% to 20% by the year 2020 (CBN, 2012). This literally means that Nigerian government aimed to achieve 80% financial inclusion by year 2020. In spite of the policy initiatives, the EFinA (2020) survey revealed that only 64% of adults Nigerians were financially included by the end of 2020, which means that 36% of Nigerians adults, that is about 38 million adults, remained financially excluded. Although there had been growth, it however fell below the NFIS target of 80% coverage. This piece of information has been corroborated by the CBN (2020) when the apex bank published that the financial inclusion rate had slightly increased from 63.2% in 2018 to 64.1% in 2020, even though the bank cited the adverse effect of Covid-19 as the cause of the marginal performance. The most recent survey by EFinA (2024) still indicated that approximately 26 % of Nigerian adults, around 28.8 million individuals”remain financially excluded despite gains in formal and informal financial inclusion.

Economic growth is one of the major macroeconomic objectives of every economy. Inclusive growth is considered even more desirable, as the concept implies a broad based economic growth which comes alongside development. Other concepts used interchangeably with inclusive growth include pro-poor growth or broad-based growth. Gross domestic product (GDP) growth rate in Nigeria averaged 0.91% from 2010 to 2020, reaching an all-time high of 12.10% in the third quarter of 2020 and record low of -14.30% in the first quarter of 2020 (World Bank, 2020). Within the same period, unemployment also increased and stood at about 23.1%. A report by World Bank (2018), approximately half of the populations living in poverty. Nigeria, “the giant of Africa” and one of the largest economies in Africa, with an estimated population of about 182,202,000 people in 2018, comprising of adult population of about 99,604,148 of which about 56 million (53%) of adults were unbanked (EFINA,

2020).

Despite growing interest, comprehensive studies examining the impact of financial inclusion “on inclusive growth in Nigeria have remained limited (Salami et al 2024). Thus, the main objective of this study is to analyse the nature of causality between access (and usage) of the formal financial services and inclusive economic growth in Nigeria, between the period of 1986 and 2024. The rest of the paper is organised as follows: literature review which is the second part of the paper, methodology with which the objectives of the paper could be achieved is the third section of the paper. Section four presents the empirical findings, and section five concludes the” paper.

## Literature Review

### Theoretical Literature

There are many economic theories of growth that have been in existence but only a few of those theories discuss and clearly show the linkage between finance and growth in developing countries such as Nigeria. Two of these Theories are reviewed in this subsection.

#### 1. The Harrod-Domar Model

The “Harrod-Domar model of economic growth propounded independently by Roy Harrod and Evsey Domar differ in details but all arrive at one conclusion. The model emphasizes the role of savings and investment as the key drivers of economic growth. It shows that investment has two effects in the economy, a demand side effect and a supply side effect. From demand side, investment creates income, while the supply side effect augments the productive capacity of the economy by increasing its capital stock”as indicated in Figure 1.

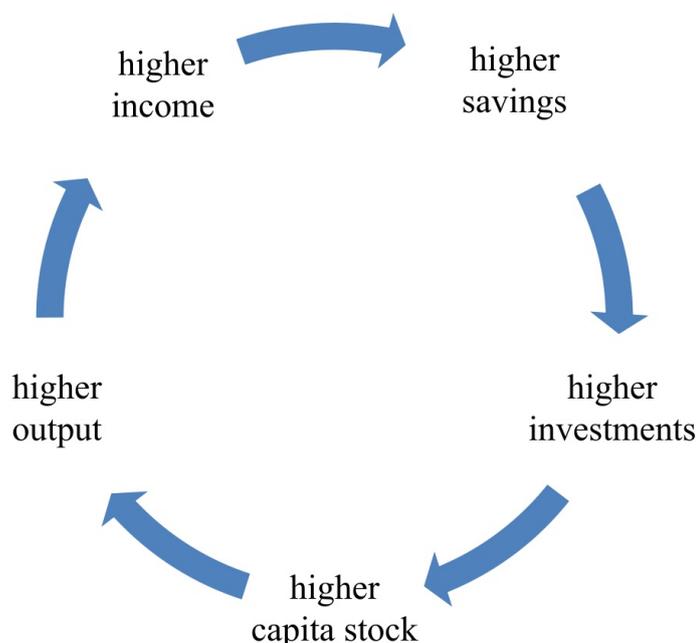


Figure 1: Harrod-Domar Model.

The model implies that when investment is taking place in the economy, the capital

stock is enhanced and hence output and income expand. The reverse is the case when there is little or no investment taking place in the economy.

The “model is based on some underlying assumptions which include full employment equilibrium level of income, absence of government intervention in the working of the economy, a closed economy with no international transactions; the average propensity to save is equal to the marginal propensity to save, and constant marginal propensity to save. The model is versatile and therefore applicable to underdeveloped countries. This is because it does not only show the rate at which the economy must grow if it fully utilizes the capacity created by new investments but inversely, the required savings and capital-output ratios if income is to attain a certain targeted growth rate. The capital-output ratio is usually assumed at some value between 2.5” and 5.

## **2. Unbalanced Theory of Growth**

Unbalanced growth theory suggests that investment in an economy should be made in selected sectors rather than in all sectors. The reason behind this suggestion is that no economy has the resources and is capable of investing simultaneously in all the economic sectors. According to Hirschman, the economist behind the doctrine of unbalanced growth, it is the best way to achieve economic growth in an underdeveloped country. He believed that growth in few selected leading sectors of the economy will likely translate to all sectors gradually and bring about a balanced growth situation. The transmission mechanism that occurs as a result of these investments has been explained by Hirschman using two main terminologies namely: Social Overhead Capital (SOC) and Direct Productive Activities (DPA).

SOC is expected to create external economies while the direct productive activities appropriate external economies. SOC has been defined as comprising those basic services that stimulate primary, secondary and tertiary productive activities. They include investment in education, financial sector or power. This means that investment in social overhead capital will bring about direct productive activities in the country. On the other hand, a government may directly invest in DPA instead of SOC. Due to political pressure, the DPAs are expected to translate into SOC. The first sequence is from SOC-DPA while the second sequence is from DPA-SOC; although Hirschman preferred the sequence which is “vigorously self-propelling”. Hirschman calls the sequence from SOC-DPA “development via excess capacity of SOC” and the sequence from DPA to SOC “development via shortage of SCO”. Both theories emphasize on the inevitable role which financial institutions and services should play in the process of inclusive economic growth.

## **Empirical Literature**

The concept “of inclusive growth is referred to as rather new; this is because for a long time, economists have been interested in the attainment of economic growth in less developed, developing as well as developed countries. Somehow, economic growth has proven not to capture the average individual in the economy, in other words, economic growth in itself is not really felt all the time by the ordinary man in the economy and therefore, economists felt the need for a different concept, one that will consider the average person. This need made economists to set out on a quest to come up with a more appropriate or befitting concept, and as a result, the concept of inclusive growth came into existence. As a newly coined concept, financial inclusion and inclusive growth in Nigeria remain underexplored (CBN, 2012; Salami, et al 2024). However, the impact of financial inclusion on inclusive growth has been studied in different ways by

researchers, world over. It is not particularly surprising that the impact of financial inclusion on inclusive growth varies from country to country. In essence, financial inclusion may have a positive impact on inclusive growth in a country but a negative impact in another, or no significant impact at all in some countries.

A number of related empirical literature is reviewed in the course of this research. They include the work of Nwansi and Dibiah (2023) which employed regression analysis to explore the relationship between financial inclusion and economic growth in Nigeria from 1991 to 2021. Using key indicators such as broad money-to-GDP ratio, credit to the private sector, aggregate loan-to-deposit ratio, and liquidity ratio, the study confirmed that increase in money supply, credit provision, and liquidity positively influence GDP. These findings strongly align with Odeleye and Olusoji (2018), reinforcing the finance-led growth hypothesis, and emphasize the need for policymakers and financial institutions to prioritize long-term strategies that bolster bank lending—particularly to underserved sectors—as a pathway to inclusive economic growth.

Also, Sakanko, David, and Onimisi (2023) employed ARDL bounds testing and error-correction modeling on quarterly Nigerian data, 2007q1–2018q4, to investigate the long-run effects of financial inclusion—measured by account ownership, bank/ATM access, SME credits, and internet usage on inclusive growth indicators such as poverty, household expenditure, unemployment, and per capita income. Their findings confirmed a strong cointegrated relationship among access to credit, SME loans, and internet usage contribute to poverty reduction and higher household spending. While broader account access and ATM infrastructure foster employment growth and rising incomes. The authors advocate for policies that expand both digital and credit-based financial channels to enhance inclusive growth, echoing Van et al.'s (2019) recommendations for emerging economies to leverage financial inclusion as a key growth strategy.

Elsewhere, Odame, Appiah, and Gyimah (2024) investigated the relationship between financial inclusion and economic growth in Ghana, employing Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) estimators. The time scope of the study covers the period of 2005–2016. Their findings revealed a positive relationship between financial inclusion and GDP growth, suggesting that increased financial inclusion can lead to higher income per worker.

Aroyewun and Akinola (2024) examined the effect of financial inclusion on poverty alleviation and economic growth in Nigeria from 1982 to 2020. Utilizing data from the Central Bank of Nigeria (CBN) and the World Bank, the study employed descriptive statistics, correlation analysis, and the Autoregressive Distributed-Lag (ARDL) model to analyze the data. The findings revealed both short-term and long-term negative relationships between financial inclusion and poverty in Nigeria. Specifically, variables such as the number of commercial bank branches, loans by rural bank branches, and credits to the private sector were found to have a negative association with poverty which trigger economic growth. Conversely, lending rates were positively correlated with poverty levels. Additionally, while credits to the private sector and loans by rural bank branches were statistically insignificant, the number of commercial bank branches showed significant influence on both poverty reduction and GDP growth.

Meanwhile, Ige et al. (2024) conducted a study examining the relationship between various technological and financial indicators and their influence on credit allocation to small and medium enterprises (SMEs) in Nigeria. The study found that

increased reliance on Automated Teller Machines (ATMs) leads to a sharp decline in SME credit availability, suggesting that ATM usage may limit credit access for SMEs. Conversely, the adoption of Point of Sale (POS) systems was found to have a significant positive effect on credit allocation to SMEs and consequently growth.

In the same vein, Onwukanjo, Abdulmalik and Umar (2024) conducted an analysis to assess the effect of financial inclusion on economic growth in Nigeria from 1992 to 2023. The study utilized data from the EFinA Access to Finance (A2F) Survey and the Central Bank of Nigeria, focusing on indicators such as the number of bank branches, Automated Teller Machines (ATMs), and Point of Sale (POS) terminals. The findings revealed that while Nigeria has made progress in improving financial inclusion, it still lags behind other emerging economies like South Africa and Ghana. As of 2024, Nigeria ranked 30th globally in financial inclusion, an improvement from 36th in 2019. However, the country still trails behind regional counterparts in terms of mobile money adoption and overall financial inclusion efforts.

Lucky and Mbanefo (2024) employed unit root and Johansen cointegration tests to assess the long-term impact of financial development, measured through ATM density, POS terminal proliferation, and digital payment systems on Nigeria's real GDP from 1986 to 2023. Consistent with Wakdok (2018), their findings confirm a significant positive relationship between financial infrastructure and economic growth. The study recommends continued expansion of ATMs, POS terminals, and digital payments to deepen financial inclusion and stimulate economic activity, reinforcing the policy relevance of aligning inclusion efforts with inclusive growth goals.

In the same disposition, Odumusor, et al (2024) analysed the effect of financial inclusion on Nigeria's GDP growth. They focus on the effect of loans on small businesses and the extent to which deposits and loans from commercial banks' rural branches influenced Nigeria's economic growth from 2000 to 2020. The study employed OLS method. Findings indicated that small business financing by commercial banks impact positively on economic growth. Also, loans to rural subsidiaries of those banks have a considerable effect on Nigeria's GDP growth. The authors recommended enhancing rural financial outreach, underscoring the importance of expanding deposit mobilization and credit facilities in rural areas to drive national economic performance.

Although, researches such as the work of Odeleye and Olusoji (2015 & 2018) in Nigeria and a few others used real GDP to capture inclusive growth, however, such measure fails to capture inclusiveness as it only accounts for the value of national output at a constant price in the market. Meanwhile, GDP per capita, which chosen for this research captures improvement in standard of living of the average citizen as players in the economy. Also, most empirical literature in Nigeria focus more in delivering for the effectiveness of financial inclusion on economic growth rather than analyzing the direction of causality between the” two. This vacuum is filled by this study.

## **Methodology**

### **Research Design**

Generally, “the choice of a research design depends on the problem a researcher intends to solve. Thus, Ex-post facto time series research design is used for the purpose of this study. The paper employs secondary data and appropriate econometric models to

establish the causality relationship between the variables of interest. Specifically, the study uses time series design in order to establish the causal link between financial inclusion and inclusive economic growth measured in GDP percapita in Nigeria.

In order to evade spurious analysis, the study will first test the stationary status of all the variables, using Augmented Dickey-Fuller and Phillips-Perron Unit root tests, to observe if there exists a unit root problem in the series. Also, a cointegration test will be carried out to establish the existence of long-run relationship between the variables, before exploring the causal relationship.

The Augmented Dickey-Fuller ADF test:

$$\Delta y_t = a_0 + \delta y_{t-1} + \sum_{i=1}^k \beta_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

Where  $\varepsilon_t$  represent Error Term, and  $\Delta y_{t-1} = (y_{t-1} - y_{t-2})$ ,  $\Delta y_{t-2} = (y_{t-2} - y_{t-3})$  etc

The Phillips-Perron (PP) test:

$$\Delta y_t = \pi y_{t-1} + \beta_1 D_{t-i} + \varepsilon_t \quad (2)$$

Where  $\varepsilon_t$  is an  $I(0)$  with zero mean and  $D_{t-i}$  is a deterministic trend component. If the variables are all  $I(1)$ , Johansen Cointegration test will be carried out to ascertain the existence of long-run relation among the vectors, to avoid spurious” estimation.

### Model Specification

The research conducted by “Odeleye and Olusoji (2015 & 2018) served as the basis for the model that was used to examine the impact of financial access and financial usage on inclusive growth in Nigeria. However, several modifications have been made in order to meet the specific goals of this study. The model is first stated in a simple functional form. It is then further specified in a more robust format to show the link between some of the variables and to better meet the research objectives. GDP per capita (GPC) as a variable was used as proxy of inclusive growth. On the other hand, financial inclusion is disaggregated into five variables, to capture availability, accessibility, as well as usage of financial services. For availability, number of commercial bank branches per hundred thousand adult (NBB), while accessibility is measured by both commercial bank lending rate (BLR) and interest rate (INT). Lastly, usage of financial services is measure by commercial bank deposit (CBD) as well as credit to private sector (CPS). The functional form of the model is shown in equation 3 as follows:

$$GPC = f(NBB, BLR, CBD, CPS, INT) \quad (3)$$

The model can be further written in econometric form as follows:

$$GPC_t = \alpha_0 + \alpha_1 NBB_t + \alpha_2 BLR_t + \alpha_3 CBD_t + \alpha_4 CPS_t + \alpha_5 INT_t + \mu_t \quad (4)$$

Where:

GPC= Growth Percapita

NBB = Number of bank branches per 100,000 adults

BLR = Commercial Bank Lending Rate

CBD = Commercial Bank Deposit

CPS = Credit to Private Sector

INT = Interest Rate

t = Time trend

$\alpha_1 \dots \alpha_6$  = Parameter coefficients

$\mu_t$  = Error term

If all the variables are found to be integrated after differencing, I(1), then Granger causality test would be used to examine the nature of causal relationship between the variables (Gujarati & Porter, 2009). The Granger causality models are specified in the following equations:

$$GPC_t = \sum_{i=1}^n \phi_{1i} GPC_{t-i} + \sum_{j=1}^n \phi_{2j} NBB_{t-j} + \sum_{j=1}^n \phi_{3j} BLR_{t-j} + \sum_{j=1}^n \phi_{4j} CBD_{t-j} + \mathcal{E}_{1t} \quad (5)$$

$$NBB_t = \sum_{i=1}^n \beta_{1i} NBB_{t-i} + \sum_{j=1}^n \beta_{2j} GPC_{t-j} + \sum_{j=1}^n \beta_{3j} BLR_{t-j} + \sum_{j=1}^n \beta_{4j} CBD_{t-j} + \mathcal{E}_{1t} \quad (6)$$

$$BLR_t = \sum_{i=1}^n \nu_{1i} BLR_{t-i} + \sum_{j=1}^n \nu_{2j} GPC_{t-j} + \sum_{j=1}^n \nu_{3j} NBB_{t-j} + \sum_{j=1}^n \nu_{4j} CBD_{t-j} + \mathcal{E}_{1t} \quad (7)$$

$$CBD_t = \sum_{i=1}^n \alpha_{1i} CBD_{t-i} + \sum_{j=1}^n \alpha_{2j} GPC_{t-j} + \sum_{j=1}^n \alpha_{3j} NBB_{t-j} + \sum_{j=1}^n \alpha_{4j} BLR_{t-j} + \mathcal{E}_{1t} \quad (8)$$

Where:  $\phi_1$ -  $\phi_4$ ,  $\beta_1$ - $\beta_4$ ,  $\nu_1$ - $\nu_4$ ,  $\alpha_1$ - $\alpha_4$  are parameters to be estimated.

## Empirical Results and Discussions

### Descriptive Statistics of the Variables

The study gives descriptive statistics for the variables in terms of mean, standard deviation, lowest value, highest value, skewness, kurtosis, and Jarque-Bera. The statistics were reported using the log of the variables, and Table 1 showed the outcomes.

Table 1: Descriptive Statistics of the Variables

	lnGPC	lnNBB	lnBLR	lnCBD	lnCPS	lnINT
Mean	3.017282	6.82778	1.231345	7.498085	5.200745	1.15132
Maximum	3.49122	8.310353	1.500374	11.074	9.666	1.50037
Minimum	2.431724	3.7	0.974665	2.815	1.8	0.39794
Std. Dev.	0.317751	1.29933	0.1208	2.720042	2.468963	0.27219
Skewness	-0.050977	-0.993455	-0.524883	-0.74079	0.408482	-1.6453
Kurtosis	1.532484	2.751836	3.192134	1.996043	1.84226	4.93886
Jarque-Bera	3.606663	6.682334	1.898205	5.338383	3.346319	24.3121
Probability	0.164749	0.035396	0.387088	0.069308	0.187653	5E-06

Source: Author's Computation, (2024)

The data for inclusive economic growth had a “mean of 3.017282, a minimum of

2.431724, a maximum of 3.49122, and a standard deviation of 0.317751, showing that the data is clustered around the mean because the standard deviation is lower than the mean value. Similarly, the mean, highest, lowest, and standard deviation for Number of Bank Branches were 6.82778, 3.7, 8.310353, and 1.29933, respectively suggesting that the data is clustered around the mean because the standard deviation is lower than the mean value. In the same vein, the mean value for the Commercial Bank Lending Rate is 1.231345, with a minimum and maximum value of 0.974665 and 1.500374, respectively, and a standard deviation of 0.1208, indicating that the data is also clustered around the mean because of the low standard deviation. The mean value for Commercial Bank Deposit is 7.498085, with a minimum of 2.815, and a maximum of 11.074, and a standard deviation of 2.720042, implying that the data is also clustered around the mean because the standard deviation is smaller than the mean value. Similarly, it was also discovered that Credit to Private Sector had a mean value of 5.200745, a minimum value of 1.8, a highest value of 9.666, and a standard deviation of 2.468963, showing that the data is clustered around the mean because the standard deviation is smaller than the mean value.

The mean value for Interest Rate is 1.15132, with a minimum of 0.39794, and a maximum of 1.50037, and a standard deviation of 0.27219, implying that the data is also clustered around the mean because the standard deviation is smaller than the mean value. The skewness values for inclusive economic growth, number of bank branches, commercial bank lending rate, commercial bank deposit and interest rate showed negative signs, indicating that the data are skewed to the left of the normal curve. On the other hand, the skewness value for credit to private sector showed significant positive sign indicating that the data are skewed to the right of the normal curve. Additionally, the commercial bank lending rate and interest rate both had kurtosis values that were higher than 3, indicating that their curves are more peaked. However, inclusive economic growth, bank branches number, commercial bank deposits, and lending to the private sector all have kurtosis values under 3, indicating that their curves are less peaked. Lastly, the Jarque-Berra statistics' p-values for inclusive economic growth, commercial bank lending rate, commercial bank deposit, and credit to the private sector are greater than 5%, indicating that the residuals of these variables are normally distributed. However, the Jarque-Berra statistics' p-values for Interest Rate and Number of Bank Branches are both less than 5%, indicating that the residuals for these variables are not normally distributed.

### Unit Root Test

For “the unit root test of the variables, the Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) techniques were both utilized, and the outcomes are reported in Tables 2A and 2B, respectively.

Table 2A: Summary of Augmented Dickey-Fuller Unit Root Test at Trend and Intercept

Level					First Difference				
Variable	Test Statistics	5% Critical Value	P-Value	Order of Integration	Test Statistics	5% Critical Value	P-Value	Order of Integration	at First

lnGPC	-3.381248	-3.529758	0.0687	-4.874083	-3.533083	0.0018	I(1)
lnNBB	-2.505101	-3.529758	0.3241	-5.633287	-3.533083	0.0002	I(1)
lnBLR	-3.451602	-3.540328	0.0604	-4.867979	-3.536601	0.0019	I(1)
lnCBD	-1.760311	-3.562882	0.6993	-5.604090	-3.533083	0.0002	I(1)
lnCPS	-1.610887	-3.529758	0.7704	-6.118088	-3.533083	0.0001	I(1)
lnINT	-1.221787	-3.544284	0.8902	-4.857815	-3.548490	0.0022	I(1)

Source: Author's Computation, 2024

Table 2B: Summary of Phillips-Perron Unit Root Test at Trend and Intercept

Variables	Level			First Difference			
	Test Statistics	5% Critical Value	P-Value	Test Statistics	5% Critical Value	P Value	Order of Integration
lnGPC	-3.183641	-3.529758	0.1025	-4.835086	-3.533083	0.0020	I(1)
lnNBB	-2.503365	-3.529758	0.3249	-6.146303	-3.533083	0.0001	I(1)
lnBLR	-1.770583	-3.529758	0.6996	-6.207716	-3.533083	0.0000	I(1)
lnCBD	-1.930113	-3.529758	0.6199	-5.590568	-3.533083	0.0003	I(1)
lnCPS	-1.643839	-3.529758	0.7567	-6.120304	-3.533083	0.0001	I(1)
lnINT	-2.486774	-3.529758	0.3325	-5.459575	-3.533083	0.0004	I(1)

Source: Authors' Computation, (2024)

The results of the Augmented Dickey-Fuller Unit Root Test and the Phillips-Perron Unit Root Test indicate that none of the variables used in the analysis, such as the number of bank branches, the commercial bank lending rate, the commercial bank deposit rate, the credit to the private sector, and the interest rate, are stationary at the level using a 5 % significant level. This is because, in absolute terms, the values of their test statistics at level are lower than their level 5% critical levels. The variables were subsequently subjected to their first difference, at which point they became stationary since, in absolute terms, their test statistics at first difference values are now larger than their first difference 5% critical values. The unit root test results indicate that all of the variables used in the analysis are integrated of order one, I (1). This can also be justified

intuitively because all the variables are naturally trending variables, as such they can only be stationary after differencing, and it further justifies the use of Granger Causality test which is a VAR-based method” (Asteriou & Hall, 2007).

### Johansen Cointegration Test

H<sub>0</sub>: There is no cointegration among the variables

Table 3: Johansen Cointegration Test Result

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.312068	96.23128	47.85613	0.0000
At most 1*	0.215641	45.34510	28.78706	0.0006
At most 2*	0.141410	16.66048	15.49471	0.0037
At most 3*	0.096486	5.443665	3.841466	0.0401
At most 4	0.002581	1.009562	2.476011	0.1704
At most 5	0.000031	0.306752	1.902322	0.6095

Source: Source: Authors’ Computation, (2024)

Table 3 shows the result of Johansen Cointegration test to find out if there is any element of long-run relationship between the variables. The result clearly shows that we should reject the null hypothesis and ascertain that there are at least three cointegrating vectors in the model. Thus, the normalized cointegration test showed there is presence of long run relationship among the variables.

### Granger Causality Test

The “results of the analysis, which was done using the Granger Causality Test, are shown in Table 3.

Table 4: Granger Causality Test Results

Null Hypothesis	Obs.	F-Statistic	Prob.	Nature of Causality
lnNBB does not Granger Cause lnGPC	38	3.54256	0.0464	Unidirectional
lnGPC does not Granger Cause lnNBB		0.77699	0.6402	
lnBLR does not Granger Cause lnGPC	38	2.34233	0.1119	None
lnGPC does not Granger Cause lnBLR		1.73137	0.1927	
lnCBD does not Granger Cause lnGPC	38	6.06671	0.0357	Unidirectional

lnGPC does not Granger Cause lnCBD		0.76897	0.5773	
lnBLR does not Granger Cause lnNBB	38	0.15551	0.8566	None
lnNBB does not Granger Cause lnBLR		0.28735	0.7521	
lnCBD does not Granger Cause lnNBB	38	3.43811	0.0440	Bidirectional
lnNBB does not Granger Cause lnCBD		4.30847	0.0437	
lnCBD does not Granger Cause lnBLR	38	0.06155	0.9404	None
lnBLR does not Granger Cause lnCBD		0.19140	0.8267	

Source: Authors' Computation, (2024)

From the results in Table 4, the first null hypothesis that number of bank branches does not Granger causes inclusive economic growth is rejected because the probability value of the F- statistic is less than 5% and conclude that number of bank branches cause inclusive economic growth. On the other hand, the second null hypothesis that inclusive economic growth does not Granger cause number of bank branches is accepted because the probability value of the F-statistic is more than 5% and conclude that inclusive economic growth does not Granger cause number of bank branches. Therefore, there is a unidirectional causality running from number of bank branches to inclusive economic growth. For commercial bank lending rate and inclusive economic growth relationship, the first null hypothesis that commercial bank lending rate does not Granger cause inclusive economic growth is accepted because the probability value of the F-statistic is more than 5% and conclude that commercial bank lending rate does not cause inclusive economic growth. In the same manner, the second null hypothesis that inclusive economic growth does not Granger cause commercial bank lending rate is accepted because the probability value of the F-statistic is more than 5% and concludes that inclusive economic growth does not Granger cause commercial bank lending rate, implying that there is no causal relationship between commercial bank lending rate and inclusive economic growth For commercial bank deposit and inclusive economic growth relationship, the first null hypothesis that commercial bank deposit does not Granger causes inclusive economic growth is rejected because the probability value of the F-statistic is less than 5% and conclude that commercial bank deposit causes inclusive economic” growth.

On the other hand, “the second null hypothesis that inclusive economic growth does not Granger cause commercial bank deposit is accepted because the probability value of the F-statistic is more than 5% and conclude that inclusive economic growth does not Granger cause commercial bank deposit, suggesting that there is a unidirectional causality running from commercial bank deposit to inclusive economic growth over the study period. For commercial bank lending rate and number of bank branches relationship, the first null hypothesis that commercial bank lending rate does not Granger cause number of bank branches is accepted because the Probability value of the F-statistic is more than 5% and conclude that commercial bank lending rate does not causes number of bank branches. Similarly, the second null hypothesis that number

of bank branches does not Granger cause commercial bank lending rate is accepted because the probability value of the F-statistic is more than 5% and conclude that number of bank branches does not Granger cause commercial bank lending rate, implying that is no causal relationship between commercial bank lending rate and number of bank branches for commercial bank deposit and number of bank branches relationship, the first null hypothesis that commercial bank deposit does not Granger cause number of bank branches is rejected because the Probability value of the F-statistic is less than 5% and conclude that commercial bank deposit causes number of bank” branches.

In a similar manner, “the second null hypothesis that number of bank branches does not Granger cause commercial bank deposit is rejected because the probability value of the F-statistic is less than 5% and conclude that number of bank branches cause commercial bank deposit, implying that there is bidirectional causality between number of bank branches and commercial bank deposit for commercial bank deposit and commercial bank lending rate relationship, the first null hypothesis that commercial bank deposit does not Granger cause commercial bank lending rate is accepted because the probability value of the F-statistic is more than 5% and conclude that commercial bank deposit does not causes commercial bank lending rate. Similarly, the second null hypothesis that commercial bank lending rate does not Granger cause commercial bank deposit is accepted because the probability value of the F-statistic is more than 5% and conclude that commercial bank lending rate does not cause commercial bank deposit, implying that there is no causal between commercial bank lending rate and commercial bank” deposit.

## **Conclusion and Recommendations**

The study analysed the nature of causality “between Financial Inclusion, measured in Access and Usage, and Inclusive Economic Growth in Nigeria. The study found that there is a unidirectional causality running from number of bank branches to inclusive economic growth. Findings also revealed that there is a unidirectional causality running from commercial bank deposit (a measure for financial usage) to inclusive economic growth. The results also indicated that there is no causal relationship between commercial bank lending rate (a measure for financial usage) and inclusive economic growth. It was also found that there is no causal relationship between commercial bank lending rate (a proxy for financial access) and financial usage (measure by number of bank branches) in Nigeria. Also, there is bidirectional causality between number of bank branches (a measure for financial access) and commercial bank deposit (a proxy for financial usage).

Thus, the study recommends that there is a need for coordinated action between the banks, government and financial authorities to facilitate access to bank accounts amongst the financially excluded. In particular, the CBN should strengthen the financial system through innovations, suitable and effective regulation and oversight, efficient money mobilization and making such funds available for useful investments, and enhanced services. The apex bank should implement policies that would improve the development, functionality, and standard of banks in Nigeria in order to ensure financial stability and inclusive” growth in the national economy.

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