RESEARCH ARTICLE

Financial Inclusion And Economic Growth In Nigeria

Nelson Christopher[1*] , iyakwari Anna Dyaji Baba[1] ,Olabanji Olugbenga Afolabi[1]

[1]Department of Economics Bingham University, Karu. Nasarawa State, Nigeria

Corresponding Author: Nelson Christopher: nelsonchristopher70@gmail.com

Abstract

Financial inclusion signifies the practice of granting access to financial services and credit to families, enterprises, and administrations at reasonable prices. It encompasses measures designed to augment the utilization of official financial offerings within the economic framework. This research employed an ex-post facto study design to evaluate data on elements like banking penetration, usage of financial services, and access to financial services, concerning GDP growth. Relationships and interactions among these factors were scrutinized using the Autoregressive Distributed Lag Model (ARDL), which displayed strong explanatory capabilities and statistical validity. The research revealed that, without inputs from access to financial services, the usage of financial services, and banking penetration, the self-sustaining gross domestic product (GDP) is negative and statistically noteworthy. Over the short term, a negative link is observed between GDP and access to financial services (AFS); however, in the long term, AFS manifests a positive correlation with real GDP (RGDP). The usage of financial services (UFS) demonstrates a favorable relationship with GDP, accentuating the necessity of bolstering financial literacy and inspiring individuals and enterprises to effectively make use of financial services. The existing phase of banking penetration (BP) exerts a negligible impact on economic growth, but it is vital for policymakers to persistently observe and evaluate its long-term influence. Upholding a facilitative regulatory setting and stimulating rivalry within the banking sector are essential for enduring economic development. The regression analysis furnishes policy suggestions aimed at amplifying access to finance, boosting financial literacy, and confronting issues related to banking penetration. By tackling constraints that limit access to finance, upgrading infrastructure, and diminishing entry obstacles, sustainable economic growth can be achieved. Advocating for financial literacy and encouraging the adoption of financial services have the potential to elevate economic activities and spur GDP growth. Even though the current influence of banking penetration is not significant, it remains crucial for policymakers to keep track of and analyze its future implications.

Keyword: Financial Inclusion, Economic Growth, Usage of Financial Service, Access to Financial Services, Banking Penetration

Introduction

The pursuit of economic growth is a primary objective for most countries, as governments intervene in their economies to allocate resources, distribute wealth, and stabilize conditions. This is particularly important due to the limitations of the free market system. Governments employ monetary and fiscal policies to steer their economies toward development and achieve rapid economic growth. Economic growth is the steady rise over time in a nation's ability to generate goods and services, resulting in higher per capita income. It is driven by technological advancements, institutional changes, and

ideological shifts. Various administrations in Nigeria, including the National Development Plans and initiatives like the Structural Adjustment Program and National Economic Empowerment and Development Strategy, have influenced the country's economic growth. These government policies play a crucial role in supporting economic growth, as enhancing the range, quantity, and quality of goods and services is vital for improving the overall quality of life, especially in developing nations. To bridge the gap between savers and those in need of financial resources for consumption and production, the government must establish appropriate financial structures that act as intermediaries. The financial system facilitates

the drive of money from areas of surplus to areas of scarcity, promoting investment, higher returns on financial resources, and increased productivity. According to Igwe, Edeh, and Ukpere (2014), the financial system of a country serves a broader purpose than just allocating savings to investments. It must effectively utilize available resources for development to function efficiently from within.

According to economic theory, The financial industry is essential to promoting economic growth. The provision of affordable loans by the banking sector to productive sectors of the economy is believed to foster inclusive economic growth. This aligns with Nwafor's (2018) argument that access to financial services is a vital tool for the government to promote economic growth by efficiently allocating productive resources and reducing the cost of capital. Access to formal financial services enables individuals, businesses, and governments to obtain resources for production, consumption, and investment. It enables effective resource allocation and discourages reliance on illegal loan sources like predatory money lenders. The efficient allocation of resources by the financial system facilitates access to capital for investment purposes, promoting economic growth and ultimately improving the quality of life for residents.

ensuring household access to timely and sufficient finance services, businesses, and governments, including economically active individuals with low incomes, at affordable costs, is known as financial inclusion or deepening, as stated by Mwangi and Cheluget (2018). Financial inclusion encompasses initiatives aimed at providing access to and usage of financial services for all members of an economy, thus increasing the utilization of formal financial services within the economic system. The expansion of the economy's productive sectors is facilitated by the health of the financial sector encompassing services such as banking penetration, access to financial services, financial service consumption, and money management.

Banking penetration, which refers to the number of individuals with active accounts in commercial banks, is an important indicator of financial inclusion, as highlighted by Ibor, Offiong, and Mendie (2017). It provides insights into the distribution of financial services within an economy and can be interpreted as the number of individuals with functioning accounts at deposit money institutions. Banking penetration serves as an indicator of economic well-being, particularly in low-income countries. Bank products, such as savings accounts, fixed deposits, current accounts, and loans, allow individuals, businesses, and governments to manage their income and expenses, protect

against unexpected changes, and make investments in human or physical capital. Keynesian economics recognizes the role of currency in transactions, precautionary measures, and speculation by individuals, businesses, and governments. Higher levels of banking services utilization are often observed in urban areas due to factors such as higher income levels, wealth, education, formal employment, and accessibility to digital financial innovations. Conversely, residents in rural areas tend to rely on safekeeping cash or informal money lenders who charge exorbitant interest rates for loans. Consequently, financial service utilization among low-income urban residents is generally lower.

Deposit money banks in Nigeria offer a range of accounts, including current, savings, and fixed deposit accounts. Savings accounts are commonly used by individuals with irregular income, while fixed deposit accounts can be opened by anyone. Individuals with stable incomes or regular employment are more likely to utilize current accounts. Opening a bank account is necessary to access financial services provided by banks. However, owning a bank account does not guarantee active usage of the bank's services, as highlighted by Sarma and Pias (2011). Financial inclusion goes beyond the physical presence of bank branches, as well as ICT (information and communication technology) use is transforming how people access and utilize banking services globally. Technology-driven innovations such as USSD codes for money transfers and mobile banking applications have expanded the range of banking services available. Ibor et al. (2017) also emphasize the importance of active utilization of financial services, rather than mere account ownership, when assessing financial inclusion.

The theory of finance-driven growth, first posited by Bagehot in 1873, argues that an absence of financial capital plays a role in earnings disparity and sluggish economic development. Per this viewpoint, financial innovations serve as the linchpin for stimulating advantageous economic growth. Consequently, securing reliable, speedy, and cost-effective avenues for funding is vital for achieving broad-based advancement, narrowing income gaps, lessening poverty levels, offering equitable chances, incorporating people who are socially and financially disenfranchised into the economic framework, enhancing economic robustness, and cushioning the blow of economic shocks (Serrao et al., 2012).

Inhabitants of rural areas frequently encounter obstacles when it comes to utilizing banking and financial services,

largely due to widespread educational deficiencies. Inadequate and incorrect information programs further limit their understanding of the benefits of banks and their services. This deprives people of potential investment and consumption opportunities. Onaolapo (2015) agrees with this view and emphasizes that without inclusive financial systems, the poor must rely on their limited savings for future investments, while micro and small businesses struggle to pursue growth prospects due to limited earnings. These factors contribute to persistent income disparities and hinder economic growth.

Despite the expansion and globalization of the payment system and financial markets, a significant portion of the population remains excluded. The government and financial sector authorities aim to create favorable conditions for an open and competitive market, while financial inclusion refers to providing affordable banking services to underprivileged and low-income groups. By analyzing the effects of banking penetration, the use of financial services, and access to financial services on the country's economic growth, this article seeks to investigate how government policies linked to financial inclusion affect economic growth in Nigeria.

Literature Review

Conceptual Review

Financial Inclusion

The supply of financial services to diverse societal sectors is known as financial inclusion, including impoverished individuals, socially marginalized groups, micro, small, medium, and large-scale enterprises, and governments. It aims to ensure that qualified financial service providers meet the financial and social security needs of these previously excluded groups, accommodating their circumstances and specific requirements.

Financial inclusion, according to the Reserve Bank of India (2008), is the process of granting access to suitable financial goods and services from established institutions to vulnerable groups, such as the weaker portions and low-income groups. This access needs to be offered honestly, openly, and at reasonable costs. Financial inclusion is defined by the Central Bank of Nigeria (2012) as a situation in which people have simple access to a wide choice of financial products that are catered to their requirements and supplied at competitive costs. Payment services, savings accounts, credit options, insurance, and revenue-generating opportunities are some of these items.

Access to Financial Services

The financial sector plays a crucial role in connecting those with excess funds to those in need of financial resources for consumption and investment. Deposit money institutions serve as intermediaries, directing deposits from individuals who have surplus funds to those who require them.

Demand and supply factors are used to evaluate access to financial services. On the demand side, it is determined whether financial services like deposits, credit, and mobile accounts are readily available. The supply side takes into account the accessibility of household savings, insurance, and loans. Indicators including the number of bank deposits, loans, and mobile accounts per 1,000 individuals in the population are used to gauge the accessibility of financial services, according to Beck et al. (2013). The importance of holding a bank account as a crucial indicator of financial inclusion and mobility is also emphasized by Sarma and Pias (2011). This indicator would have a value of 1 when each adult person in a nation had a bank account. The number of bank savings accounts, lending accounts, and mobile accounts can be used as a percentage of 1,000 adults to construct this indicator in the lack of information on the population that is banked. In this study, the dimension of access to financial services was calculated using the number of bank savings, loans, and mobile accounts held by particular institutions expressed as a proportion of the adult population.

Economic Growth

Economic growth refers to the ongoing improvement in the standard of living within a country, region, or city, accompanied by continuous changes in the industrial base of the economy Ray, (1998). It represents the gradual increase in the production of goods and services by industry. While per capita income has traditionally been a favored indicator of economic development, it is not the sole measure. GDP (Gross Domestic Product) has been commonly used to assess economic development, represents the market value of all finished products produced in a country over a certain time period. However, GDP was originally developed for assessment purposes rather than measuring economic development.

Economic growth entails the expansion of a country's capacity to generate products and goods, encompassing various factors such as commercial inventions, government expenditures, personal spending, and investments in construction. Two measures have been established to

quantify economic development. The first is GDP, which is considered the broadest indicator of economic output and development, and the second is GNP (Gross National Product), which measures the value of output for activities covered by the national accounting system over a specified period. GDP, representing the annual value of changes in real national production, provides a monetary measure of economic development. The growth or trend in potential GDP is referred to as long-term GDP. GDP per capita is often used to compare countries with different population sizes World Bank (2012).

Empirical Review

Ilemona and Ome (2021) conducted a study to explore the impact of financial evolution on equitable advancement in Nigeria, leveraging chronological records from 1986 to 2019. Various indicators were utilized as surrogates for fiscal deepening, encompassing the money supply's proportion to GDP, credit available to the private sector in relation to GDP, aggregate national reserves against GDP, and borrowing rates. Utilizing the Autoregressive Distributed Lag (ARDL) approach for estimation, the researchers found that aspects like the money supply, private-sector credit, and overall national savings had a positive correlation with Nigeria's equitable progress. Conversely, lending rates showed a negative correlation. The study concluded that public authorities should focus on enhancing the fiscal infrastructure by elevating these key ratios to facilitate inclusive growth.

Adegboyegun and collaborators in 2021 probed the dynamics between financial inclusion and fiscal development in Nigeria. They evaluated factors such as Gross Domestic Product, rural credit availability, deposits originating from rural sectors, the count of banking facilities, and prevailing interest rates. The data, covering 1986 to 2018, was analyzed through the ARDL and Causality frameworks. The analysis revealed that interest rates severely hindered economic prosperity, whereas financial inclusion offered significant benefits. A unidirectional relationship between fiscal development and financial inclusion was established by the causality analysis, where rural loans emerged as a crucial element. The study advised that lending to rural areas should be done at more reasonable rates and with fewer administrative hurdles to boost inclusive growth.

In 2021, Mahmood and his team delved into the effects of human assets and digital financial inclusion on the economic expansion of various Chinese provinces. They gauged digital financial inclusion based on its scope, depth, and digital adoption level. The factual outcomes indicated that the economic enlargement of China's regions was notably steered by both human resourcefulness and digital fiscal inclusion. To achieve superior economic growth rates, the paper suggested amplifying digital fiscal inclusion and investing in human asset cultivation.

Nwafor, in 2018, assessed the link connecting financial inclusion and Nigeria's economic ascension. Employing the Two-Staged Least Squares Regression Technique with data ranging from 2001 to 2016, the study demonstrated that financial inclusion had a significantly positive effect on Nigeria's economic vitality. The report advocated that Nigerian financial institutions should engineer products that cater to economically underserved areas, thus enhancing GDP per capita and overall economic upliftment.

In another related study, Thomas (2017) scrutinized the relationship between ease of capital acquisition and a nation's economic ascent. The focus of this inquiry was on how the engagement with financial services contributes to fiscal enhancement. By utilizing post-hoc analytical procedures and data from 2007 to 2015, the General Method of Moments (GMM) was implemented for estimation. The analysis showed that greater financial accessibility correlates with elevated income per capita. Additionally, low-income countries appeared to benefit more than their middle-income counterparts when it came to fiscal growth due to enhanced financial access.

Similarly, in 2017, Dinesha executed a data-based analysis focusing on the interplay between equitable progress and fiscal literacy in India. Employing retrospective analytical methods, the study made use of diverse regression econometric models. The findings revealed that financial literacy significantly aids in broadening access to resources, fostering responsible financial conduct, and empowering people to launch ventures that contribute to poverty alleviation.

Furthermore, Lenka and Bairwa (2016) examined financial inclusion and its effect on economic growth across the South Asian Association for Regional Cooperation (SAARC) nations from 2004 to 2013. Utilizing an ex-post-facto approach, they formulated a Financial Inclusion Index via Principal Component Analysis (PCA). The study disclosed that financial inclusion had a meaningful impact on economic prosperity during the years in question. Interestingly, this analysis did not incorporate the endogenous variable of Nigeria's GDP or the four exogenous variables of banking reach, utilization of

financial services, access to financial service or accessibility, and monetary management. This leaves an avenue open for future research to explore these aspects.

Theoretical Review

Financial Intermediation Theory

The study is grounded in the financial intermediation theory, originally proposed by Gurley and Shaw in 1960. This theory explains the role of banks as intermediaries between savers and borrowers in an economy. It highlights the influence of finance on resource allocation efficiency and economic opportunities for individuals from different socioeconomic backgrounds. Banks offer various financial services such as deposit mobilization, savings, and provision of liquidity, among others. Banks can develop and offer specific financial products through intermediation to meet the demands of various consumers. When banks are able to earn larger returns that meet their costs, this happens. Furthermore, banks are a result of market imperfections since they wouldn't be necessary in a perfect market with no transaction or information costs.

The financial intermediation theory elucidates how commercial banks bridge the gap between individuals and businesses with surplus funds and those in need of funds for consumption and production. Banks act as intermediaries by collecting deposits from savers and providing these funds to borrowers who require them. Investors and depositors are risk-averse and face uncertainty regarding future opportunities. Through intermediation, banks assist investors in avoiding long term illiquid investments that may yield high payoffs for future consumers. Financial market frictions, as highlighted by Demirgüç-Kunt, Beck, and Honohan (2008), are crucial mechanisms that can lead to persistent income inequality and poverty gaps if not addressed. The level of accumulated capital, combined with imperfect financial markets, determines the extent to which individuals, particularly those with limited resources, can access funds for investment in consumption and physical capital.

Financial growth, modernization growth, and integrated income models are closely intertwined with the promotion of financial inclusion. Reducing market imperfections and enhancing financial market efficiency, as observed by Demirgüç-Kunt and Klapper (2012), expands individual opportunities and creates positive incentives. As financial intermediaries, commercial banks are essential for promoting sound corporate governance, lowering risk, and

facilitating efficient economic transactions. By increasing the level of financial inclusion, banks aim to mitigate market frictions, reduce information asymmetry, and address market imperfections among users, as emphasized by Hannig and Jansen (2010)

Methodology

The approach used in this study encompassed gathering and scrutinizing data via a retrospective research model. Information related to variables like banking outreach, engagement with financial services, availability of financial options, fiscal management, and the expansion of Gross Domestic Product (GDP) were taken into account. The dataset for the inquiry was obtained from the statistical bulletins of the Central Bank of Nigeria, which supplied trustworthy chronological data.

For the purpose of data interpretation, the study employed the ARDL analytical framework. This statistical methodology permitted the exploration of interrelationships and trends among the variables being scrutinized. By leveraging the ARDL model, the researchers were able to establish a sturdy foundation for evaluating both long-range and near-term impacts among the variables, thereby facilitating insightful inferences from the analysis.

Model Specification

To accomplish the specified objectives, the investigation employs the Autoregressive Distributed Lag (ARDL) framework. In this model, the outcome variable is considered to be influenced by both its past readings and the prior as well as present measurements of other factors (independent variables). Below is a representation of the functional linkage between financial inclusion and economic growth:

$$GDP = f(UFS, AFS) - - - - - - - - - - - (1)$$

where:

GDP $\quad$ = Gross Domestic Product

UFS $\quad$ = Usage of Financial Services

AFS $\quad$ = Access to Financial Services

It is expressed explicitly as

$$GDP_t = \alpha + \beta_1 UFS_t + \beta_2 ASF_t + \mu_t \ -------------------------- (2)$$

Where;

α = intercept

$\beta_1 - \beta_2$ = parameter estimates of the regressors

u_1 = stochastic error terms.

The bounds testing approach implies estimating the following autoregressive distributed lag model for banks asset:

$$\Delta GDPGRA_t = \theta_0 + \beta_1 UFS_{t-1} + \beta_2 AFS_{t-1_2}$$
$$+ \beta_3 \sum_{k=1}^{p} \infty_k \Delta UFS_{t-k}$$
$$+ \sum_{j=1}^{p} \infty_j \Delta AFS_{t-k}$$
$$+ u_{1t} \quad . \quad . \quad . \quad (3)$$

u_{1t} is the white noise error term

$\beta_i s, \infty_k s, \beta_j s, \gamma_j s, \Pi_i s, \alpha_j s$ and $\rho_j s$ are parameters to be estimated

$p = (1,2, ..., k)$ are lag lengths to be determined empirically using Akaike information model selection criteria.

Note: the isolation of the long-run coefficients, $\pi_i s$, and $\Pi_i s$ make the remaining variables stationary.

$$\Delta GDP_t = \alpha + \sum_{i=1}^{q} \beta_1 GDP_{t-1} + \sum_{i=1}^{q} \beta_2 UFS_{t-1} + \sum_{i=1}^{q} \beta_3 AFS_{t-1} + \beta_4 \Delta GDP_{t-i} + \beta_5 \Delta UFS_{t-i} + \beta_6 \Delta AFS_{t-i} + \mu_t \ --------------- (4)$$

Specifying the equation in ECM will be as follows;

$$\Delta GDP_t = \alpha + \sum_{i=1}^{q} \beta_1 GDP_{t-1} + \sum_{i=1}^{q} \beta_2 UFS_{t-1} + \sum_{i=1}^{q} \beta_3 AFS_{t-1} + \beta_4 \Delta GDP_{t-i} + \beta_5 \Delta UFS_{t-i} + \beta_6 \Delta AFS_{t-i} + ECM \ ---------------$$
$$(5)$$

Where:

Δ = First difference operator

α = Constant parameter

β_1, β_2 to β_{10} = Parameter Co-efficient

μ_t = Error term

ECT = Error correction term

Results and Discussion

The results of this study are presented in several stages. Firstly, descriptive statistics are provided to analyze the mean, standard deviations, and auto-correlation properties of the dataset. This sets the foundation for further examination. Secondly, a Unit Root test is conducted to determine the stationarity properties of the series. This test helps assess whether the variables exhibit a stable behavior over time. Thirdly, the ARDL model and post-estimation tests are performed and the corresponding results are presented. These tests provide insights into the relationships and dynamics between the variables under investigation. Table 1 has the presentation of the descriptive statistics.

Table 1: Descriptive Statistics

	GDP	AFS	UFS	BP
Mean	52098.99	57166.63	140669.3	3897.848
Std. Dev.	57551.22	89953.19	265091.6	1607.308
Skewness	1.017969	1.655643	2.056170	-0.02274
Kurtosis	2.921858	4.281684	5.927014	1.238478
Jarque-Bera	5.707834	17.33507	35.03328	4.269412
Probability	0.057618	0.000172	0.000000	0.118279
Observations	33	33	33	33

Source: Authors Computation, (Eview-12), 2023

The mean values of (AFS), (UFS), and (BP) are 89953.19, 140669.3, and 3897.848, respectively. However, their respective standard deviations of 89953.19, 265091.6, and 1607.308 indicate significant fluctuations in these variables. The data for AFS, UFS, and BP are not well distributed, exhibiting considerable variability.

The skewness values for GDP, AFS, and UFS are positive (1.017969, 1.655643, and 2.056170), indicating a right-skewed distribution. This suggests that the data for these variables are skewed towards higher values. On the other hand, the skewness value for BP is negative (-0.02274), indicating a left-skewed distribution.

The kurtosis values for all variables (GDP and BP) are less than 3 (2.921858 and 1.238478), suggesting a flatter distribution (platykurtic) compared to a normal distribution.

The Jarque-Bera statistics results indicate that GDP and BP follow a normal distribution, as their respective prob values are higher than 0.05. However, AFS and UFS show probability values less than 0.05, indicating that these variables do not follow a normal distribution.

Table 2: UNIT ROOT TEST

The unit root test is conducted to check if their is stationarity in the variables used in the analysis.

Summary of ADF unit Root Text Result

VARIABLES	ADF TEST STATISTICS	CRITICAL VALUES	PROB VALUE	ORDER OF INTEGRATION
GDP	-5.795814	-3.562882	0.0092	I(1)
AFS	-10.68301	-3.562882	0.0000	I(1)
UFS	-4.568344	-2.998064	0.0295	I(1)
BF	-6.236279	-3.562882	0.0001	I(1)

Source: Authors Computation, (Eview-12), 2023
Note: The test includes both Trends and Intercepts and all at 5% level of significance.

Each variable in the model showed stability upon utilizing the first difference, as evidenced by the results of the Augmented Dickey-Fuller (ADF) test, and this was statistically meaningful at a 5% level of significance. Consequently, the null hypothesis of a unit root was rejected for all variables under examination.

Table 3: Cointegration Bound Test

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.674094	10%	3.47	4.45
K	3	5%	4.01	5.07
		2.5%	4.52	5.62
		1%	5.17	6.36

Source: Authors Computation, (Eview-12), 2023

The F-statistic, with a value of 7.674094, surpasses both the lower threshold of 4.01 and the upper critical value of 5.07, based on the 5% significance level as displayed in Table 3. Owing to the co-integration present among the variables in the model, there's a likelihood of a stable, long-term relationship between the dependent and independent variables. Consequently, we dismiss the null hypothesis suggesting a lack of long-term relationship at a 5% significance level.

Table 4:
ARDL Model Results of the Short-Run, Long-Run ECM
Dependent Variable: GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12869.63	1954.075	-6.58605	0.0001
@TREND	458.119	133.1372	3.440954	0.0063
D(GDP(-1))	0.253827	0.161766	1.569094	0.1477
D(AFS)	-0.020835	0.013201	-1.5783	0.0456
D(AFS(-1))	-0.181722	0.02479	-7.33057	0.0000
D(AFS(-2))	-0.09158	0.018478	-4.95614	0.0006
D(AFS(-3))	-0.035027	0.020543	-1.7051	0.119
D(UFS)	0.013766	0.002169	6.347289	0.0001
D(UFS(-1))	-0.031535	0.004145	-7.60764	0.0000
D(UFS(-2))	-0.01132	0.002692	-4.20454	0.0018
D(UFS(-3))	-0.015945	0.002043	-7.80397	0.0000
D(BP)	0.004414	0.600366	0.007353	0.9943
D(BP(-1))	-2.062587	0.562894	-3.66426	0.0044
CointEq(-1)*	-0.20801	0.032928	-6.31706	0.0001
R-squared	0.977058			
Adjusted R-squared	0.950586			
F-statistic	36.90931			
Prob(F-statistic)	0.00000			
Durbin-Watson stat	2.391707			

LONG-RUN				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AFS	0.545674	0.2951	1.849116	0.0442
UFS	0.181722	0.082954	2.190646	0.0233
BP	20.90958	10.83138	1.930463	0.0824

Source: Authors Computation, 2023 (Eviews-12)

The high R-squared (R2) value of 0.977, which shows that around 98% of the variations in the gross domestic product (GDP) can be explained by the changes in the independent variables included in the model, is a reflection of the independent variables' predictive power. The remaining 2% is made up of variables that the model was unable to account for. There is a significant connection between the independent variables and the GDP, as indicated by the high R-squared value of 98%. The meager 2% unexplained component shows that the independent variables' explanatory ability is only somewhat compromised.

The probability (prob) value of the F-statistic, which is 0.00000 and less than 0.05, supports the conclusion that the model is appropriate for economic and policy-making objectives. The F-statistic's significance shows that the model's overall explanatory power is statistically significant.

Additionally, the Durbin-Watson statistic of 2.391707 indicates the possibility of negative autocorrelation, which

denotes a relationship between the model's mistakes across time.

Discussion of Findings

The constant term implies that the autonomous gross domestic product (GDP) is negative and statistically significant at -12869.63, with a probability (prob) value of 0.0001, in the absence of contributions from financial access, financial service use, and banking penetration.

The relationship between GDP and access to financial services (AFS) is inverse in the near term. GDP is predicted to drop by -0.020835 for every unit rise in AFS. This relationship has a probability value of 0.0456, which indicates statistical significance. AFS does, however, demonstrate a long-term positive association with real GDP (RGDP). RGDP is anticipated to rise by 0.545674 for every unit increase in AFS. With a probability of 0.0442, this positive connection is statistically significant.

The short-term relationship between GDP and UFS usage is one of positive correlation. The GDP increases by 0.013766 for every unit increase in UFS. The relationship has a probability value of 0.0001 and is statistically significant. Similar to how UFS sustains a positive association with GDP over time. The GDP increases by 0.181722 for every additional unit of UFS. The probability value for this beneficial affect is 0.0233, making it statistically significant.

However, the current level of banking penetration (BP) has a negligible and advantageous impact on economic expansion. Economic growth is 0.004414 percent higher in the present time for every unit change in banking penetration. However, this change is deemed statistically insignificant, with a probability value of 0.9943, which is above 0.05.

The error correction term (ECT) is statistically significant at the 5% level, is negative, and is less than one. According to the coefficient value of -0.20801, it takes around 20.80 percent per year to restore a long-run link between the dependent variable and the independent variable when there is disequilibrium.

Diagnostic Tests

An investigation of the residuals was carried out to check for potential serial correlation and heteroskedasticity in order to confirm the model's robustness. To ascertain if there is a connection between the error terms at various intervals, the Breusch-Godfrey Serial connection LM Test was applied. This test aids in determining if the residuals exhibit serial correlation.

Additionally, the Breusch-Pagan Godfrey Heteroskedasticity Test was employed to investigate the presence of heteroskedasticity in the residuals. This test examines whether the variance of the error terms remains constant or varies across different levels of the independent variables.

By conducting these tests, we can assess the presence of serial correlation and heteroskedasticity in the residuals, which are crucial considerations for evaluating the reliability and robustness of the model

Residual-Based Diagnostic Tests

Breusch-Godfrey Serial Correlation LM Test	
F-statistic	1.416677
p-values	0.2974

Heteroskedasticity Test: Breusch-Pagan-Godfrey	
F-statistic	1.114085
p-values	0.4461

Source: Authors Computation, 2023 (Eviews-12)

As shown by the derived p-value of 0.2974 for the F-statistic of 1.416677, the Breusch-Godfrey Serial Correlation LM test findings indicate that the null hypothesis of "no serial correlation" cannot be discarded.

Therefore, there is little evidence to support the idea that serial correlation exists in the ARDL model's residuals.

Similar to the Breusch-Pagan-Godfrey heteroskedasticity test results, when the null hypothesis of "homoskedasticity" is taken into account, the F-statistic of 1.114085 is statistically insignificant with a p-value of 0.4461. This implies that the model's residuals do not include any meaningful evidence of heteroskedasticity.

Conclusion

The regression model that was used to examine the correlation between the independent variables (access to finance, use of financial services, and banking penetration) and the gross domestic product (GDP) has good explanatory power and statistical significance. Approximately 98% of the variations in GDP can be accounted for by changes in the independent variables in the model, according to the high R-squared value of 0.977. The remaining 2% reflects elements that the model did not account for.

1. Financial Access: In light of the adverse link between Access to Financial Services (AFS) and GDP in the short-term, regulators should zero in on isolating and tackling the elements that limit financial accessibility. This might encompass upgrading fiscal frameworks, endorsing Financial Inclusion initiatives, and mitigating hurdles for entry for financial organizations. Long-term strategies aimed at ameliorating access to financial services could bolster Economic Growth, corroborated by the affirmative relationship between AFS and real GDP (RGDP).

2. Utilization of Financial Services: With the positive association seen between Usage of Financial Services (UFS) and GDP, both in immediate and extended periods, the necessity to advance financial literacy and incentivize both individuals and enterprises to engage with financial services effectively stands out. Policymakers should earmark campaigns that elevate financial understanding and advocate for the uptake of financial services like savings accounts, insurance policies, and investment instruments. This has the potential to amplify economic operations and enhance GDP expansion.

3. Banking Reach: Even though the existing stage of Banking Penetration (BP) doesn't have a significant influence on economic growth, regulators should persist in scrutinizing and evaluating the repercussions of banking penetration across durations. While present study doesn't show a statistically meaningful correlation, future shifts or transformations in the banking sphere could carry implications for Economic Growth. It remains crucial to sustain a facilitative regulatory backdrop and inspire competition in the banking sector to enhance an environment that is conducive and favorable for lasting economic development.

Declaration: I Nelson Christopher declare that this journal paper has been written by us. It has not been presented in any previous publication.

References

Adegboyegun, A., Ademola, A. O., & Kazeem, B. L. (2021). Financial Inclusion and Economic Growth in Nigeria. The Social and Management Scientist, 12, 91-106. ISSN: 2489-0006.

Babajide, A. A., Adegboye, F. B., & Omankhanlen, A. E. (2015). Financial inclusion and economic growth in Nigeria. International Journal of Economics and Financial Issues, 5(3), 629-637.

Beck, T., Demirgüç-Kunt, A., & Singer, D. (2013). Is small beautiful? Financial structure, size, and access to finance. World Development, 52, 19-33.

Central Bank of Nigeria. (2011). Further Clarification on Cashless Lagos Project. Retrieved from http://www.cenbank.org/cashless/

Demirgüç-Kunt, T., Beck, T., & Honohan, P. (2008). Finance for all Policies and Pitfalls in Expanding Access. Tilburg University, School of Economics and Management.

Dinesha, T. (2017). Financial Literacy and Inclusive Growth: Challenges and Opportunities. SSRN. http://dx.doi.org/10.2139/ssrn.2985436

Gurley, J. G., Shaw, E. S., & Enthoven, A. C. (1960). Money in a Theory of Finance. Brookings Inst. Retrieved from https://lccn.loc.gov/60007985.

Hannig, A., & Jansen, S. (2010). Financial Inclusion and Financial Stability: Current Policy Issues. Asian Development Bank Institute Working Paper Series No. 257

Honohan, P. (2008). Cross-country variation in household access to financial services. Journal of Banking & Finance, 32(11), 2493-2500.

Ibor, B. I., Offiong, A. I., & Mendie, E. S. (2017). Financial Inclusion and Performance of Micro, Small, and Medium Scale Enterprises in Nigeria. International Journal of Research, 5(3).

Igwe, A., Edeh, C. E., & Ukpere, W. I. (2014). Financial deepening and economic growth in Nigeria (1981-2012): A managerial economic perspective. Risk Governance & Control: Financial Markets & Institutions, 4(4), 120-131.

Iheanacho, E. N. (2014). National Development Planning in Nigeria: An Endless Search for Appropriate Development Strategy. International Journal of Economic Development Research and Investment, 5, ISSN: 2141-6729.

Lenka, S. K., & Bairwa, A. K. (2016). Does financial inclusion affect monetary policy in SAARC countries? Cogent Economics & Finance, 4(1), 1127011.

Mahmood Ahmad, Abdul Majeed, Muhammad Asif Khan, Muhammad Sohaib, & Khurram Shehzad. (2021). Digital financial inclusion and economic growth: provincial data analysis of China. China Economic Journal, 14(3), 291-310. DOI: 10.1080/17538963.2021.1882064

Mwangi, W. P., & Cheluget, J. (2018). Role of financial literacy, financial innovation, financial inclusion on SME Access to credit in Kenya: A case of Kumisa SACCO. Journal of Finance and Accounting, 2(2), 1-18.

Ndebbio, J. (2004). Financial Deepening, Economic Growth, and Development: Evidence from Selected Sub-Saharan African Countries (African Economic Research Consortium (AERC) Research Paper Working Paper No. 142).

Nwafor, M. C. (2018). The Nexus between Financial Inclusion and Economic Growth: Evidence from Nigeria. International Journal of Science and Innovation in Social Science, 2(4).

Ray, D. (1998). Development Economics: Debraj Ray. Princeton, NJ: Princeton University Press.

Odhiambo, G. O. (2005). Teacher appraisal: The experiences of Kenyan secondary school teachers. Journal of Educational Administration, 43(4), 402-416.

Ome, A. I. W. E. (2021). An Examination of the Impact of Financial Deepening on Inclusive Growth in Nigeria. International Journal of Economics and Development Policy (IJEDP), 4(1), 13-25.

Onaolapo, A. R. (2015). Effects of Financial Inclusion on the economic growth of Nigeria (1982 2012). International. Handbook of statistics on the Indian economy. The Bank.

Sarma, M., & Pais, J. (2011). Financial inclusion and development. Journal of International Development, 23(5), 613-628. https://doi.org/10.1002/jid.1670

Serrao, M. V., Sequeira, A. H., & Hans, B. (2012). Designing a methodology to investigate accessibility and impact of financial inclusion. Household Finance e-Journal, CMBO.

Thomas, A. E., Bhasi, M., & Chandramouli, R. (2017). Financial Accessibility and Economic Growth-Evidence from SAARC Countries.

Todaro, M.P. (2005). Economic Development in the Third World. Longman, New York.

World Bank. Information, Communication Technologies, & infoDev (Program). (2012). Information and communications for development 2012: Maximizing mobile. World Bank Publications