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FINANCIAL INCLUSION AND ECONOMIC PERFORMANCE IN EMERGING ECONOMICS: THE NIGERIAN EXPERIENCED USING ARDL MODEL

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ABSTRACT

The study explored the connection between financial inclusion and economic performance spanning between 2009:Q1 and 2021:Q4. The study modelled economic performance using GDP and the volume of transactions; POS, USSD, ATM, and credit to public sector represents financial inclusion. The study concludes that financial inclusion spurred economic performance in Nigeria. The study recommends the need for government to embark on rural electronic banking services campaign to ensure more provision of financial services in the rural areas in order to have more banking coverage, so as to stimulate economic activities which will directly promotes inclusive economic performance.

Keywords: Financial inclusion economic performance, GDP, POS, ARDL
JEF Classifications: E44, E58, G2, B28, C1, C22

INTRODUCTION

The nexus between output and financial inclusion has been visited extensively in Asian region (Fungáčová & Weill, 2015; Li, 2018) in China; (Ghosh & Vinod, 2017; Chakravarty & Pal, 2013; Rachana, 2011; Das, 2012; Mahadeva, 2008; Sharma, 2016) in India; Rosengard & Prasetyantoko, 2011) in Indonesia. All pointing that substantial economic achievement is attained through financial inclusion. Supporting the view of Muhamad et al., (2020) in Nigeria, that sound inclusive financial environment spurred output. Despite, the several documented literatures supporting the effect of financial inclusion on output (Joseph et al. 2020; Angga et al., 2020). Some literatures have shown a negative relationship with economic performance (Demirguc-Kunt et al., 2017; Iqbal & Sami, 2017; Nkwede, 2015; Olubanjo, 2017; Sassia & Goaied, 2012; Olubanjo, 2017; Peterand & Okpebru, 2020; Okonkwo & Nwanna, 2021), Barajas et al., 2011; Ratnawati, 2020; and Uruakpa et al., 2019). Another strand of literature, opined that there exist mixed results and inconsistencies on the Nexus between inclusive financial activities and growth (Geetha et al., 2011). While, another school of thought argued that economic growth and financial inclusion have a nonlinear relationship in the developing countries (Philippon & Reshef, 2013).

However, most of the studies employed different variables as measures of financial inclusion. For inatance, Okonkwo and Nwanna (2021), used credit to the private sector against nominal GDP. Nkwede (2015) used no. of bank branches, ATM, credit cards to proxy financial inclusion. Okonkwo and Nwanna (2021) adopted rural bank loans, credit to the private sector, rural bank loans, currency in circulation, rural bank deposits, and currency ouside banks. While, Nwafor and Yomi (2018) applied commercial bank loans to rural areas, commercial bank loan to deposit ratio, broad money/GDP; to measure financial inclusion. Hence, the study will focus on examining financial inclusion and economic performance using volume of ATM transaction, volume of POS, credit to private sector, volume of USSD transaction against GDP based on ARDL ECM so as to have the literature gap filled.

Theoretical Review

The anchored-on finance-led growth theory, earlier developed by Bagehot in 1873. The proponents of this theory opined that financial development and economic performance are interwind. Several

empirical studies (Babajide et al., 2015; Odeniran & Udeaja, 2010; Serrao et al., 2012), observed that that safety, access to affordable and more efficient financial services is a prerequisite for accelerating productive activities, reduce poverty level, reducing income disparities, and enhance economic performance.

Empirical Review

The empirical studies that investigate financial inclusion and economic performance have been studied extensive recently. However, each study with varying assertion. For instance, in Asia Cyn-Young and Ragelio (2015), focused attention on income inequality and financial inclusion and poverty. While in Ghana, adopted two rounds of living standards survey data to study financial inclusion on energy poverty using multidimensional measures, Isaac and Michael (2021) study show that income inequality is minimize through inclusive financial services. On the other hand, Joseph and Varghese (2014) explained financial inclusion in Indian economy and elaborated that financial inclusion is a major determinant of economic development

Specifically, in Nigeria context, Nkwede (2015) explain financial inclusion and output. The findings, though appeared to have an adverse effect between financial inclusion and national growth. However, it was attributed to; a weak financial regulatory oversight, high level of financial excluded adult from financial product and services. Also, in Nigeria, Okonkwo and Nwanna, (2021), investigate financial inclusion on growth. The variables used for the study includes; rural branches deposit, currency outside banking, credit to private sector (CPS) and Currency in circulation. The study shows that all the variables used for the study depicts that financial inclusion have a positive effect on growth. While, the study of Peterand and Okpebru (2020) in Nigeria, report a negative effect between growth and fiancial inclusion

Research Methodology

The study investigates the distributional characteristics of the series using PP and ADF of the Phillips and Perron (1988), and the Augmented Dickey and Fuller (1979) unit root test to account for the stationarity of the series. The study adopts the ARDL bound test to account for the presence of long-run. The study therefore applied the ARDL (ECM) model to account for adjusting to lung run equilibrium from short run disequilibrium.

The functional form of the interrelationship financial inclusion and economic performance is given as:

$$\gamma=\int(\phi,\varpi,\kappa,\vartheta) \quad (1)$$

The econometric form is given as:

$$\gamma_t = \alpha + \beta_1\phi_t + \beta_2\varpi_t + \beta_3\kappa_t + \beta_4\vartheta_t + \mu \quad (2)$$

Equation 2 is transformed to log form to reduce the problem of heteroskedasticity (Gujarati, 2004). Therefore, the logged equation is represented as follow:

$$Ln\gamma_t = \alpha + \beta_1 Ln\phi_t + \beta_2 Ln\varpi_t + \beta_3 Ln\kappa_t + \beta_4 Ln\vartheta_t + \mu \quad (3)$$

Gamma (γ) *represents* gross domestic product *(GDP), Phi* (ϕ) *denote volume of ATM transaction, Pi* (ϖ) *represent volume of point of sales transaction, Kai* (κ) *represents, the volume of volume of USSD transaction, Theta* (ϑ) *represent credit to the private sector. While,* α represent alpha. Whereas, Ln= natural log. β_1…..β_4 represent there respected slopes.λ

RESULT

Table 1 Summary Statistics

Descriptive Summary

	$Ln\gamma$	$Ln\vartheta$	$Ln\kappa$	$Ln\varpi$	$Ln\phi$
Mean	16.831	8.234	15.733	15.745	18.459
Median	16.820	8.278	16.001	15.911	18.605
Maximum	22.230	12.094	19.405	19.018	19.486
Minimum	13.249	5.463	11.612	11.684	15.865

Std. Dev.	1.578	1.203	2.284	2.414	0.854
Skewness	1.242	-0.029	-0.044	-0.138	-1.243
Kurtosis	7.365	4.309	2.034	1.594	4.001
Jarque-Bera	53.610	3.649	2.000	4.361	15.266
Prob	0.000	0.161	0.368	0.113	0.001
N	52	52	52	52	52
Correlation Matrix					
$Ln\gamma$	1				
$Ln\vartheta$	0.650	1			
$Ln\varkappa$	0.642	0.839	1		
$Ln\varpi$	0.631	0.831	0.966	1	
$Ln\phi$	0.638	0.783	0.839	0.860	1

Source: Author Computation, 2023

Table 2 ADF and PP Unit Root Result

Variables	**ADF**				**PP**				
	@level		**1st Diff**		**@level**		**1st Diff**		**I(d)**
	t-Stat	**Prob**	**t-Stat**	**Prob**	**t-Stat**	**Prob**	**t-Stat**	**Prob**	
$Ln\varkappa$	-3.525	0.047*	-7.905	0.000*	-3.524	0.048*	-7.859	0.000*	**I(0)**
$Ln\vartheta$	-6.127	0.000*	-7.186	0.000*	-6.089	0.000*	-24.504	0.000*	**I(0)**
$Ln\phi$	-2.526	0.315	-7.141	0.000*	-2.779	0.212	-7.141	0.000*	**I(1)**
$Ln\varpi$	-2.910	0.168	-9.164	0.000*	-2.791	0.207	-9.784	0.000*	**I(1)**
$Ln\gamma$	-4.770	0.002*	-7.124	0.000*	-4.655	0.003*	-10.629	0.000*	**I(0)**

Source: Author Computation, 2023

Table 3 Lag Selection Test

Lag Selection	Lag Selection Model						**Recommended Lag Order**
n	LogL	LR	FPE	AIC	SC	HQ	
Variables : $Ln\gamma, Ln\vartheta\ \ Ln\varkappa, Ln\varpi, Ln\phi$							
0	-286.671	NA	0.169	12.412	12.608	12.486	No
1	-139.667	256.474*	0.001*	7.220*	8.401*	7.664*	Yes
2	-119.175	31.392	0.001	7.412	9.577	8.226	No

Source: Author Computation, 2023

Table 4 Bound Test

Model	Lag Selection	F-Stat	Remark
$Ln\gamma P\ Ln\vartheta\ Ln\varkappa, Ln\varpi\ Ln\phi$	(1,0,0,0,0)	4.123	Long-run Relationship

Source: Author Computation, 2023

Table 5 Long-Run Estimation

Dependent Variable: D($Ln\gamma$)

Variable	B	Std. Error	t-Stats	Prob.
D($Ln\gamma$ (-1))	0.860	0.310	2.776	0.008*
.λ(-1)	-1.358	0.315	-4.314	0.000*
D($Ln\phi$)	0.454	0.578	0.785	0.437
D($Ln\varpi$)	0.100	0.576	0.174	0.863
D($Ln\varsigma$)	0.331	0.442	0.749	0.458
D($Ln\vartheta$)	-0.046	0.251	-1.435	0.159
α	-0.046	0.182	-0.253	0.801
R^2	0.389			
Adj. R^2	0.298			
Prob.	0.002			

Diagnostic Test

LM Test:	0.473
B-P-G Test	0.576
R R (Functional) Test	0.488

Source: Author Computation, 2023

Findings

Table 1 (Descriptive Summary) exert a normal distribution at 5% significance level except $Ln\gamma$ and the log of ATM transactions with Jarque-Bera probability statistics of 0.000 and 0.001 which are less than 5 percent level of significance resulting in the rejection of null hypothesis of normal distribution of the series. In addition, the correlation test result shows that there is a strong correlation between volume of POS transactions and the volume of USSD. Furthermore, economic output and financial inclusion are strongly correlated as revealed among all the parameters estimated.

From table 2, all the variables estimated revealed a mix order order (1) and Order (0). Hence, the need for lag selection. The table 3, revealed that lag (1) is the most significant lag for both models. From the result of table 4, when the $Ln\gamma$ is specified as the dependent variable, the study fails to accept the *Ho* of no long run relationship at 10% and 5% respectively, showing statistical evidence of long-run relationship among economic performance and financial inclusion. Hence, the estimated of ARDL error correction model.

From Table 5. Reports a positive and insignificant effect between ($Ln\varsigma$), ($Ln\varpi$), ($Ln\phi$) on GDP in Nigeria. While, there is negative insignificant impact with ($Ln\vartheta$) and GDP in Nigeria. The result supports those findings of Kim et al., (2017), on economic growth and financial inclusion in the Islamic Cooperation (OIC) countries with the empirical evident that financial inclusion have a positive impact on growth. Furthermore, the result shown that there is positive autocorrelation of economic performance. i.e previous year economic performance has impact on current performance in Nigeria. The study also shown that financial inclusion account for 38.9% contribution of economic performance in Nigeria between 2009:Q1-2021:Q4 with a speed of adjustment of 135.8% quarterly to converge at long-run equilibrium shown from the .λ(-1). Hence, supporting the long-run literatures evidence of financial inclusion and economic growth (Gretta, 2017; Harley et al., 2017; Okonkwo & Nwanna, 2021 and Retnawati, 2020).

Conclusion and Policy Implications

The study delve empirically on financial inclusion and economic performance based on quarterly data from CBN Statistical Bulletin issued spanning the period of 2009:Q1-2021:Q4. The study modelled economic performance using GDP. While, volume of Automated Teller Machine

transaction, credit to private sector, volume of USSD transactions and volume of Point of sales (POS) transaction was proxy as financial inclusion, representing the dependent variables. The study was able to concludes that financial inclusion spurred economic performance in Nigeria. The study highlights the need for government to embark on rural electronic banking services campaign to ensure more provision of financial services and products in the rural areas in order to have more financial coverage, so as to stimulate economic activities which will directly promotes inclusive economic performance.

Limitation of the Study

The study fails to address the problem of multicollinearity (See: Table 1) between USSD and POS which might affect the result which might limit the result of the study. Quarterly data were employed, rather than daily, and monthly as the later might produce a closer view on the development of financial inclusion visa-viz economic performance in Nigeria as against on the quarterly data basis. The study concentrates only on the time period spanning 2009:Q1-2021:Q4 as expansion of the scope to date might produce a better update on the current issue on the role of financial inclusion on the performance of Nigerian economy.

The study only employed four independent variables as against others studies (See: Wakdok, 2018, Okonkwo & Nwanna, 2021; Okoye, et al., 2017; Ratnawati, 2020) as more and difference variables might produce a robust analysis and result for more policy implications.

Contribution to Knowledge

The paper was able to expand the existing literature using quarterly data spanning the period between 2009:Q1 and 2021:Q4 on the concept so as to provide a new empirical review in terms of frequency of data, data range, that will enable academia to use it for further empirical studies and for policy implementation. The study has also provided a beam light on how financial inclusion affect economic performance. Meanwhile, the findings of the study will be a reference point for policymakers and researchers in Nigeria and beyond, on the empirical literature on the impact of financial inclusion and economic performance based on quarterly data.

Areas of Further Study

The study encourages researchers to revisit the literature using different variables, the data frequency, difference method of data analysis and up to date data. Also, others study should concentrate on the financial system rather than economic performance, or possibly cover other countries in Africa continent by widening its scope.

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