

The impact of innovative financing mechanisms on the economic growth of Nigeria

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KEY WORDS: Innovative financing; crowdfunding; public-private partnerships; economic growth

J.E.L. Classification: E44, G23, O40

DOI: <https://doi.org/10.52244/ep.2025.29.05>

For Citation: Ojogbo S., Nzekwe G.U., Akinpelu A., (2025) The impact of innovative financing mechanisms on the economic growth of Nigeria (in English). Economic Profile, Vol. 20, 1(29), p. 52-68. DOI: <https://doi.org/10.52244/ep.2025.29.05>

Abstract. *This study examines the impact of innovative financing mechanisms on economic growth in Nigeria, focusing on crowdfunding, public-private partnerships, venture capital investments, remittances, and foreign direct investment, alongside key macroeconomic variables such as trade openness, interest rate, and exchange rate. Using annual data from 1990 to 2023 and employing the Autoregressive Distributed Lag (ARDL) model, the study captures both the short-run and long-run dynamics between these financing mechanisms and economic growth. Findings reveal that crowdfunding has a significant positive impact on economic growth in both the short and long run, underscoring its growing importance as an alternative financing source that enhances entrepreneurial activity and capital formation. Conversely, public-private partnerships exhibit a significant negative effect on economic growth, highlighting the institutional, regulatory, and operational challenges that undermine their effectiveness in Nigeria. Exchange rate volatility significantly hampers economic growth, emphasizing the importance of exchange rate stability in fostering investor confidence and macroeconomic stability. Interest rates show a positive influence, suggesting that effective monetary policy can support economic growth. Remittances demonstrate limited long-run impact, largely due to their predominant use for consumption rather than productive investment. Foreign direct investment and venture capital investments do not exhibit significant long-run effects, underscoring the need for reforms that enhance the investment climate and foster linkages between foreign investors, domestic enterprises, and innovation ecosystems. The study recommends targeted policy actions to enhance the efficiency of innovative financing mechanisms, strengthen institutional frameworks, and promote financial innovation to maximize their developmental impact on Nigeria's economic growth.*

Introduction

Sustainable economic growth stands as the primary focus for both government officials and academics throughout developing economies including Nigeria. Modern economic discussions have increasingly focused on implementing new financing approaches as a significant development. Multiple financial innovations such as fintech and equity crowdfunding and

corporate venture capital drive economic development by expanding financial access and enabling investments and supporting entrepreneurship (Ozili, Ademiju, & Rachid, 2022; Sethi & Manocha, 2023). Nigeria requires non-traditional financing methods now more than ever since it faces unstable oil price markets and restricted fiscal capabilities and insufficient infrastructure (Arotile, 2022; Oyadeyi, 2024).

The development of innovative financing approaches represents an essential solution to fund shortages because small and medium-sized enterprises act as economic growth engines in Nigeria. The traditional financial service barriers prevent SMEs from accessing resources needed to create jobs and boost GDP even though these businesses drive substantial economic growth (Arotile 2022; Gibbons 2022). The financial technology industry has reshaped traditional credit and investment channels through its emergence as new alternative platforms. The digital lending platforms together with mobile banking services enhance financial access thus promoting economic growth and financial inclusion through their expanded services (Oyadeyi, 2024; Zhou, Zhu, & Luo, 2022). The adoption of fintech platforms demonstrates its ability to impact macroeconomic results including GDP expansion and income equality patterns (Sethi & Manocha, 2023).

Equity crowdfunding represents an important mechanism to gather resources which supports both new entrepreneurial businesses and infrastructure development projects. Traditional funding approaches differ from crowdfunding because it enables numerous investors to join forces and fund projects through this method (Yasar, 2021; Gibbons, 2022). The mechanism holds strong importance for Nigeria because its many potential entrepreneurs face restricted access to formal financial institutions. Through equity crowdfunding investors receive essential funding as well as market verification of projects that leads to additional investment and economic expansion (Gibbons, 2022; Hegeman & Sørheim, 2021).

Corporate venture capital (CVC) stands as an essential part of innovative financial

mechanisms. Through CVC established corporations gain access to promising startups mainly from cleantech and fintech sectors (Hegeman & Sørheim, 2021; Qamruzzaman et al., 2021). Organization investments in technology bring forth faster development of new methods while boosting operational efficiency which leads to sustained national economic expansion. The partnership between corporates and startups promotes essential elements for sustaining digital economy growth by enabling knowledge exchange and innovation distribution (Zhou, Zhu, & Luo, 2022; Oyadeyi, 2024).

Economic growth shows a direct relationship with financial inclusion that is made possible through innovative financing approaches. Ozili, Ademiju, and Rachid (2022) show that financial inclusion boosts economic participation because it gives marginalized people access to financial services. Individuals who gain access through financial inclusion can invest their funds into education and healthcare and entrepreneurship because these factors drive economic development (Nizam et al., 2020; Oyadeyi, 2024). Financial participation growth produces multiple economic effects that boost productivity and employment while raising life quality standards to support long-term economic expansion.

The support for green growth emerges from fintech innovations as they develop green financial initiatives. Zhou, Zhu, and Luo (2022) show that fintech platforms facilitate the financial capital movement to environmental projects that link sustainable development with economic growth. The study maintains heightened importance to Nigeria because its oil-based economy leads to environmental complications. The implementation of fintech technology by

Nigeria will lead to sustainable growth and eco-friendly economic development (Attah et al., 2024; Oyadeyi, 2024).

Financial mechanisms that bring innovative solutions create enduring economic value beyond their immediate financial benefits. These essential strategic mechanisms have established vital positions for decreasing poverty levels while creating human capital resources. Financial system technologies as described by Zameer et al. (2020) enhance how poverty alleviation resources reach their intended targets. Qamruzzaman et al. (2021) along with other researchers demonstrate how financial innovation establishes a dual relationship between human capital development and economic growth which requires complete economic planning systems.

This paper investigates through empirical methods the relationship between innovative financing methods and Nigerian economic development using time series data. The obtained results will guide both policy choices and strategic economic planning initiatives. A thorough Literature Review section follows the paper structure before introducing the subsequent sections. The paper then proceeds to the Methodology segment that explains the research design together with data sources and econometric analysis techniques. The Empirical Result section describes the analysis findings and the Discussion of Findings examines these results through the lens of existing literature and Nigeria's economic conditions. The final section of this document provides actionable policy solutions which utilize innovative financing approaches to build sustainable economic growth in Nigeria.

Literature Review

Theoretical Foundation

The study bases its foundation on Joseph

Schumpeter's (1934) Schumpeterian Theory of Economic Development. According to this theory innovation stands as the essential force which powers economic development. Schumpeter maintains that entrepreneurial operations backed by financial institutions create new forms of products and processes and financing approaches which break up established markets to drive economic development (Qamruzzaman et al., 2021; Oyadeyi, 2024). Financial institutions along with innovative financing mechanisms are necessary to supply capital for entrepreneurial ventures which create economic structural changes through these developments. Such financing mechanisms hold special importance in Nigeria's developing economy since traditional financing proves insufficient (Arotile 2022; Gibbons 2022).

This theory demonstrates how economic growth is enhanced through innovative financing methods that include fintech adoption combined with equity crowdfunding and corporate venture capital investments. Fintech innovations create expanded financial opportunities that help Nigerian SMEs and entrepreneurs (significant GDP contributors) obtain funding beyond traditional banking systems according to Ozili, Ademiju, & Rachid (2022) and Sethi & Manocha (2023). Digital lending platforms together with mobile banking services serve as essential tools for increasing financial inclusion and boosting investment which supports broader economic activities (Zhou, Zhu, & Luo, 2022; Oyadeyi, 2024).

Equity crowdfunding stands as a fundamental component that provides equal opportunities for various investors to support projects through limited funding areas (Yasar, 2021; Gibbons, 2022). The

mechanism enables entrepreneurial activities while promoting business expansion together with technological advancement. CVC investments enable innovation through their capability to unite established corporations with startups while sharing knowledge which drives productivity improvement (Hegeman & Sørheim 2021, Qamruzzaman et al. 2021). The investments serve as vital elements for the development of Nigeria's fintech and cleantech sectors because technological progress enhances long-term economic growth (Zhou, Zhu, & Luo, 2022).

The theory demonstrates how financial inclusion works as a key factor for economic growth. Through innovative financing methods that lower financial service restrictions the economy expands with more active participants which produces better productivity and generates new employment opportunities (Ozili, Ademiju, & Rachid, 2022; Nizam et al., 2020). The formal financial sector integrates underserved populations through Fintech platforms which leads to economic development. Financial innovations and entrepreneurial activities together drive economic growth within emerging economies such as Nigeria through the Schumpeterian framework (Oyadeyi 2024; Attah et al. 2024).

Empirical Review

Several studies have thoroughly investigated how innovative financing mechanisms influence economic growth. Adekunle, Tella, Subair, and Adegboyega (2022) conducted a study on African countries using panel data analysis to understand remittance effects on financial sector development from 1986 to 2017. The researchers discovered that remittances create a positive lasting relationship with financial development. The study by Paul

and Omeje (2022) analyzed remittance flows and health outcomes in Nigeria through VAR-Granger causality and impulse response function analysis. The authors found that personal remittances directly affected health spending through out-of-pocket payments yet changes in life expectancy and mortality rate promoted economic growth. The authors discovered that Nigeria's economic growth suffered adverse effects when remittance inflows experienced sudden changes.

John Orok and Udoka (2020) examined the impact of diaspora remittances on Nigeria's economic growth through an ex-post facto research design and OLS regression method. The researchers established a major connection between total remittances and GDP but workers' remittances demonstrated no meaningful impact. Afolabi (2022) conducted a study to evaluate the relationship between financial liberalization and trade openness on economic growth by utilizing DOLS estimation alongside Granger causality tests. The study demonstrated financial development and exchange rate and interest rate spread have direct effects on real GDP but trade openness together with financial development failed to produce significant results.

The study by Ehigiamusoe and Lean (2019) used ARDL bounds testing to analyze foreign capital inflows on Nigerian economic growth showing that portfolio investments were positive but loan inflows were negative. The research conducted by Keji (2021) demonstrated that human capital positively influences economic growth through vector autoregressive and Johansen techniques. The diagnostic tests demonstrated that the obtained results were solid and valid.

The research by Abdulkarim (2023) investigated investment and economic

growth in Nigeria through ARDL methodology and structural break stationarity tests. Long-term growth received positive impacts from private sector credit and domestic investment alongside economic liberalization but FDI and capital expenditure together with inflation rates created impediments to growth. Economic institutions established by diasporas were examined by Cummings and Gamlen (2019) for their ability to redirect migrant financial resources toward development activities in emerging markets. The research showed limited evidence which demonstrated that these institutions can boost migrant investment activities.

The study conducted by Iddris (2019) evaluated the crowdfunding impact on micro-enterprise innovation through both literature review and interviews with CEOs. The research findings demonstrated that business expansion depends heavily on funding democratization and marketing innovation together with pre-sell strategies. Neubert (2019) evaluated new crowdfunding approaches through crowdfunding and initial coin offerings which he determined supported sustainable venture capital market expansion in developing economies.

Adeosun Shittu and Ugbede (2023) studied financing determinants for micro-entrepreneurs in informal settings to discover that credit history and asset-based financing strongly influenced formal financing selection but gender and network capability were most important for informal financing. Financial awareness emerged as the essential element which determines entrepreneurs' selection between formal and informal financing methods. These empirical investigations demonstrate how innovative financing tools drive economic growth by showing the importance of strategic policy

development for maximizing their sustainable development potential in Nigeria and other emerging economies.

Research Gaps

The research by Adekunle et al. (2022), Paul and Omeje (2022), John et al. (2020) and Abdulkarim (2023) and Afolabi (2022) and Ehigiamusoe and Lean (2019) and Keji (2021) and Cummings and Gamlen (2019) focused on remittances and foreign direct investment (FDI) as financing mechanisms for economic growth but neglected emerging alternatives such as crowdfunding (CFV), public-private partnerships (PPP) and venture capital investments (VCI). The research by Abdulkarim (2023) examined investment effects without studying alternative funding sources. Financial liberalization and foreign capital inflows were investigated by Afolabi (2022) and Ehigiamusoe and Lean (2019) yet these scholars failed to examine their relationship with trade openness (TOP), inflation rate (INF), interest rate (IR) and exchange rate (EXR). The research about financing innovations and macroeconomic stability relationships remains to be investigated according to Keji (2021) and Cummings and Gamlen (2019) and their human capital and diaspora engagement findings. The potential of crowdfunding was identified by Neubert (2019) and Iddris (2019) yet they did not provide empirical evidence regarding its use in Nigeria. Previous research analyzed data using OLS, ARDL and VAR traditional econometric techniques as documented in Adeosun et al. (2023) that restricted insights into variable interdependencies. The study's findings will become deeper by analyzing multiple financing methods through advanced econometric methods to understand economic growth.

Methodology

This study adopts an **ex post facto** research design to analyze the impact of innovative financing mechanisms on the economic growth of Nigeria. The ex post facto design is appropriate because it allows for the investigation of relationships between variables where manipulation of independent variables is not possible, as the data have already occurred. This design is particularly suitable for economic research that involves historical data analysis, providing insights into causality without experimental intervention. The choice of this design is further justified by its ability to handle macroeconomic data, enabling the examination of long-term impacts of financial innovations on GDP growth in Nigeria (Qamruzzaman et al., 2021). The

study utilizes annual time series data for Nigeria, spanning from 1990 to 2023. The data sources include the Central Bank of Nigeria (CBN) statistical bulletin, World Bank Development Indicators (WDI), National Bureau of Statistics (NBS), and reports from EFINA and the Nigerian Investment Promotion Commission (NIPC). These sources are credible and comprehensive, providing relevant macroeconomic indicators and financial innovation measures necessary for robust econometric analysis..

3.4 Model Specification

The econometric model used in this study is adapted from Qamruzzaman et al. (2021) and specified as follows:

$$GDP = F(FDI, CFV, PPP, VCA, REM, IR, EXR, TOP) \dots\dots\dots(1)$$

The econometrics form is written below:

$$GDPGR_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 CFV_t + \alpha_3 PPP_t + \alpha_4 VCI_t + \alpha_5 REM_t + \alpha_6 IR_t + \alpha_7 EXR_t + \alpha_8 TOP_t + \varepsilon_t \dots\dots(2)$$

Where:

- GDPGR: GDP Growth Rate (Dependent Variable)
- FDI: Foreign Direct Investment Inflows (% of GDP)
- CFV: Crowdfunding Volume
- PPP: Public-Private Partnerships Investment
- VCI: Venture Capital Investments
- REM: Remittances (% of GDP)
- IR: Interest Rate (%)
- EXR: Exchange Rate (Naira/USD)
- TOP: Trade Openness (Exports + Imports as % of GDP)
- ε_t : Error term

Table 1: Variable Description and Measurement

Variable	Description	Measurement	Expected Sign
GDPGR	Economic Growth	Annual % change in GDP	Dependent
FDI	Foreign Direct Investment	% of GDP	Positive (+)
CFV	Crowdfunding Volume	Total annual crowdfunding (USD)	Positive (+)
PPP	Public-Private Partnerships Investment	Total annual PPP investments (USD)	Positive (+)
VCI	Venture Capital Investments	Total annual VC investments (USD)	Positive (+)

REM	Remittances	% of GDP	Positive (+)
IR	Interest Rate	Annual %	Negative (-)
EXR	Exchange Rate	Naira per USD	Negative (-)
TOP	Trade Openness	Exports + Imports as % of GDP	Positive (+)

Source: Researcher's Computations

Estimation Techniques and Diagnostic Tests

The analytical framework employs descriptive statistics to summarize the data, providing insights into the central tendency, dispersion, and distribution of the variables. Unit root tests, including the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, will be conducted to determine the stationarity properties of the series. The stationarity check is essential to avoid spurious regression results. Given the mixed order of integration expected in time series data, the ARDL bounds testing approach will be utilized to estimate the short-run and long-run dynamics among the variables. This technique is preferred for its ability to provide unbiased estimates irrespective of

whether the regressors are $I(0)$ or $I(1)$. Diagnostic tests will be conducted to ensure the robustness of the results. These tests include serial correlation tests (Breusch-Godfrey LM test), heteroskedasticity tests (Breusch-Pagan-Godfrey test), and normality tests (Jarque-Bera test). Additionally, the model's stability will be evaluated using CUSUM and CUSUMSQ tests. The Granger causality test will also be applied to determine the direction of causality between innovative financing mechanisms and economic growth. The combination of these econometric techniques and diagnostic checks will ensure reliable and valid results, providing insightful policy implications for Nigeria's economic growth trajectory.

Empirical Result

Table 2: Summary of Descriptive Statistics

	GDPGR	FDI_GDP	CFV	PPI	VCI	REM	TOP	EXR	ITR
Mean	4.246	1.295	9.068	1.025	2.547	3.319	30.508	161.970	18.604
Median	4.213	1.289	8.936	0.412	2.608	3.990	31.484	130.248	17.690
Maximum	15.329	2.900	18.950	4.462	5.007	8.334	66.397	670.780	31.650
Minimum	-2.035	-0.039	0.001	0.040	0.031	0.019	8.729	8.038	11.483
Std. Dev.	3.906	0.843	5.390	1.309	1.481	2.439	11.399	145.859	4.019
Skewness	0.500	0.169	0.091	1.558	-0.039	0.071	0.441	1.522	1.034
Kurtosis	3.487	1.887	1.882	3.840	1.932	1.775	4.311	5.651	4.795
Jarque-Bera	1.755	1.915	1.816	1.754	1.624	2.154	3.538	2.084	1.617
Probability	0.416	0.384	0.403	0.425	0.444	0.341	0.171	0.118	0.495
Observations	34	34	34	34	34	34	34	34	34

Source: Researcher's Computations

Table 2 presents the summary of descriptive statistics for the variables used in the study. The mean GDP growth rate (GDPGR) is 4.246%, with a standard deviation of 3.906,

indicating moderate fluctuations in economic growth over the period. The maximum recorded GDP growth rate is 15.329%, while the minimum is -2.035%, suggesting periods

of both high economic expansion and contraction.

Foreign direct investment as a percentage of GDP (FDI_GDP) has an average value of 1.295%, with a standard deviation of 0.843, implying relatively low but stable FDI inflows. The maximum and minimum values of 2.900% and -0.039% indicate variations in foreign investment over time. Crowdfunding volume (CFV) shows a mean of 9.068, with a high maximum of 18.950 and a minimum of 0.001, reflecting the disparity in crowdfunding activities.

Public-private partnership investment (PPI) has a mean value of 1.025, a standard deviation of 1.309, and a maximum of 4.462, demonstrating significant fluctuations. Venture capital investment (VCI) records a mean of 2.547, with a standard deviation of 1.481, highlighting its variability. Remittances (REM), as a percentage of GDP, exhibit a mean of 3.319%, with a maximum of 8.334% and a minimum of 0.019%, suggesting differences in remittance inflows.

Trade openness (TOP), measured as the sum

of exports and imports as a percentage of GDP, has an average value of 30.508%, with a maximum of 66.397% and a minimum of 8.729%, indicating periods of high and low trade integration. The exchange rate (EXR) shows significant variation, with a mean of 161.970, a standard deviation of 145.859, and a maximum of 670.780, reflecting exchange rate volatility. Interest rate (ITR) has a mean of 18.604%, with a standard deviation of 4.019 and a maximum of 31.650%, highlighting variations in borrowing costs.

The skewness and kurtosis values indicate the distributional properties of the variables. Most variables exhibit moderate skewness, with PPI and EXR showing notable positive skewness, suggesting longer right tails. The Jarque-Bera test results and probability values suggest that the variables are approximately normally distributed, as their p-values exceed 0.05. Overall, these statistics provide insights into the central tendencies, dispersion, and distributional properties of the variables, forming a basis for further empirical analysis.

Table 3: Augmented Dickey-Fuller Unit root Stationarity Test

Variables	Test at Levels @5%			Test at 1 st difference@5%			Inference
	ADF statistic	t-statistic	Prob.*	ADF statistic	t-statistic	Prob.*	
GDPGR	-1.969	-2.968	0.298	-6.750	-2.934	0.000	I(1)
FDI	-1.940	-2.941	0.311	-4.499	-2.943	0.000	I(1)
CFV	-2.382	-2.941	0.153	-4.178	-2.943	0.002	I(1)
PPI	-1.342	-2.941	0.600	-5.322	-2.943	0.000	I(1)
VCI	-3.345	-2.941	0.010	-3.599	-2.943	0.011	I(0)
REM	-3.672	-2.941	0.004	-4.781	-2.943	0.001	I(0)
TOP	-2.774	-2.941	0.072	-6.674	-2.943	0.000	I(1)
ITR	-3.833	-2.941	0.454	-4.069	-2.943	0.003	I(1)
EXR	-3.795	-2.941	0.816	-5.846	-2.943	0.000	I(1)

Source: Researcher's Computations

The table 2 presents the results of the Augmented Dickey-Fuller (ADF) unit root test, conducted to assess the stationarity properties of the variables. At levels, the majority of the variables, including GDP growth rate (GDPGR), foreign direct investment (FDI), crowdfunding volume (CFV), public-private partnership investment (PPI), trade openness (TOP), interest rate (ITR), and exchange rate (EXR), fail to reject the null hypothesis of non-stationarity at the 5% significance level, indicating the presence of unit roots in these series.

However, upon first differencing, all these variables become stationary, signifying that they are integrated of order one, $I(1)$. This confirms that these variables follow a difference-stationary process, which is essential for avoiding spurious regression results in time-series analysis.

Interestingly, venture capital investment (VCI) and remittances (REM) exhibit stationarity at levels, indicating they are integrated of order zero, $I(0)$. This suggests that these two financing mechanisms do not exhibit trends requiring differencing, thus maintaining stable statistical properties over time.

The stationarity results confirm the mixed order of integration among the variables, which supports the suitability of employing econometric techniques capable of accommodating both $I(0)$ and $I(1)$ variables, such as the Autoregressive Distributed Lag (ARDL) bounds testing approach for cointegration analysis. This approach ensures the robustness of subsequent estimations and inferences regarding the relationships between innovative financing mechanisms and economic growth in Nigeria.

Table 3: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-382.939	NA	0.352	24.496	24.908	24.632
1	-196.509	256.341	0.001	17.906	22.029*	19.273
2	-67.83	104.551*	0.001*	14.926*	22.759	17.523*

Source: Researcher's Computations

The results of the lag order selection criteria presented in Table 3 indicate that the optimal lag length for the model is two. This selection is based on the minimization of the Final Prediction Error (FPE) and Akaike Information Criterion (AIC), both of which

identified lag 2 as optimal. The selection of the appropriate lag length is essential for ensuring the reliability of model estimates, particularly in time series analysis, as it captures the dynamic structure and potential delayed effects among the variables.

Table 4: Bounds test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	$I(0)$	$I(1)$
F-statistic	9.097531	10%	1.85	2.85
K	8	5%	2.11	3.15
		2.50%	2.33	3.42
		1%	2.62	3.77

Source: Researcher's Computations

Table 4 reports the results of the bounds test for cointegration, which examines the existence of a long-run relationship among the variables. The calculated F-statistic of 9.097531 exceeds the upper critical bound (I(1)) value of 3.15 at the 5% significance level. This provides strong evidence to reject the null hypothesis of no levels relationship,

confirming the presence of a long-run equilibrium relationship among the variables. This result validates the appropriateness of the ARDL model for analyzing the impact of innovative financing mechanisms on economic growth in Nigeria, as it accommodates both I(0) and I(1) variables while identifying long-run dynamics.

Table 5: ARDL Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
long-run equqltion				
FDI	1.183	0.890	1.330	0.211
LCFV	22.946	3.607	6.362	0.000
LPPI	-6.266	1.230	-5.096	0.000
LVCi	2.272	1.630	1.394	0.191
REM	-0.786	0.404	-1.945	0.078
TOP	-0.089	0.060	-1.492	0.164
ITR	2.280	0.400	5.701	0.000
LEXR	-15.834	2.982	-5.310	0.000
C	-113.733	14.422	-7.886	0.000
Short-Run Equataion (ECM)				
D(FDI)	2.218	0.654	3.389	0.006
D(FDI(-1))	-3.578	0.490	-7.295	0.000
D(LCFV)	39.523	3.537	11.174	0.000
D(LCFV(-1))	3.078	0.313	9.823	0.000
D(LPPI)	-3.856	0.673	-5.728	0.000
D(REM)	0.333	0.246	1.351	0.204
D(REM(-1))	2.255	0.282	7.987	0.000
D(TOP)	0.140	0.033	4.285	0.001
D(TOP(-1))	0.201	0.040	5.067	0.000
D(ITR)	1.385	0.137	10.119	0.000
D(ITR(-1))	-1.393	0.159	-8.759	0.000
CointEq(-1)*	-1.512	0.118	-12.861	0.000
Model Diagnostics				
R-squared	0.909			
Adjusted R-squared	0.859			
Durbin-Watson stat	2.064			
Breusch-Pagan-Godfrey test	0.629(0.822>0.05			

Source: Researcher's Computations

Table 5 presents the results of the ARDL error correction regression, showing both the long-run and short-run dynamics between

innovative financing mechanisms and economic growth in Nigeria. In the long-run equation, crowdfunding volume (LCFV) has

a statistically significant positive effect on economic growth, with a coefficient of 22.946 ($p = 0.000$), indicating that an increase in crowdfunding volume contributes substantially to economic growth. Public-private partnership investment (LPPI), however, exerts a significant negative effect on economic growth, with a coefficient of -6.266 ($p = 0.000$), suggesting that inefficiencies in PPP investments may hinder growth. Exchange rate (LEXR) also shows a significant negative long-run impact (-15.834, $p = 0.000$), reflecting the adverse effect of exchange rate volatility on economic performance. Interest rate (ITR) positively affects economic growth (2.280, $p = 0.000$), highlighting the potential role of monetary policy in stimulating growth.

Foreign direct investment (FDI) and venture capital investment (LVCI) do not exhibit statistically significant long-run effects, with p -values of 0.211 and 0.191, respectively, implying that their impacts on economic growth may be more pronounced in the short run or dependent on other factors. Remittances (REM) also show a weakly significant negative long-run effect ($p = 0.078$), suggesting that remittance inflows may not directly contribute to productive economic activities.

In the short-run equation, several variables demonstrate significant impacts on economic growth. Both current and lagged changes in crowdfunding volume ($D(LCFV)$ and $D(LCFV(-1))$) show strong positive effects ($p = 0.000$), further reinforcing the critical role of crowdfunding in enhancing economic performance. Current changes in FDI ($D(FDI)$) positively influence economic growth ($p = 0.006$), although the lagged effect ($D(FDI(-1))$) is significantly negative

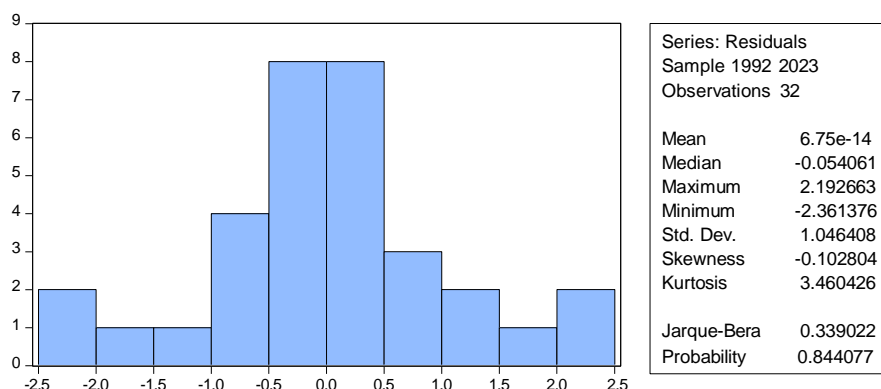
($p = 0.000$), indicating potential short-term volatility in FDI contributions.

Public-private partnership investment ($D(LPPI)$) maintains a negative short-run effect ($p = 0.000$), consistent with its long-run impact, highlighting challenges in PPP project execution. While current changes in remittances ($D(REM)$) are not significant ($p = 0.204$), lagged changes ($D(REM(-1))$) show a strong positive effect ($p = 0.000$), indicating that remittance inflows may influence growth with a time lag. Trade openness ($D(TOP)$) and its lag ($D(TOP(-1))$) both positively affect economic growth ($p = 0.001$ and $p = 0.000$), demonstrating that increased integration into global markets supports economic expansion.

The interest rate ($D(ITR)$) significantly boosts economic growth ($p = 0.000$), while its lagged value ($D(ITR(-1))$) has a significant negative effect ($p = 0.000$), suggesting that interest rate changes have both immediate stimulative effects and delayed contractionary impacts. The error correction term ($CointEq(-1)$) is highly significant and correctly signed (-1.512, $p = 0.000$), confirming the presence of a stable long-run relationship, with deviations from equilibrium being corrected at a fast pace of approximately 151% per period.

The model diagnostics indicate a high explanatory power, with an R -squared value of 0.909 and an adjusted R -squared of 0.859, demonstrating that the model captures approximately 86% of the variations in economic growth. The Durbin-Watson statistic of 2.064 suggests no evidence of serial correlation. The Breusch-Pagan-Godfrey test for heteroscedasticity returns a p -value of 0.822, indicating the absence of heteroscedasticity, further confirming the robustness of the model.

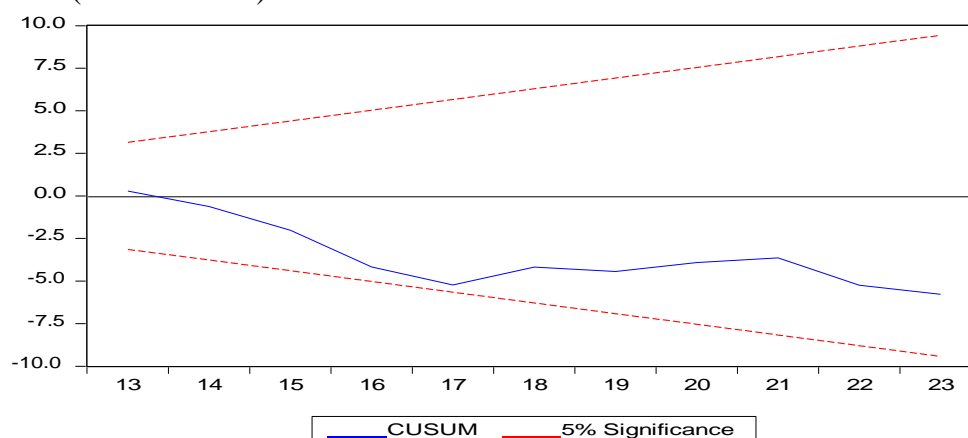
Normality Test



The normality test result indicates that the residuals from the model exhibit characteristics consistent with a normal distribution. The Jarque-Bera statistic is 0.339022 with an associated p-value of 0.844077, which is well above the conventional significance level of 0.05. This suggests that the null hypothesis of

normality cannot be rejected, indicating that the residuals are normally distributed. The histogram of residuals further supports this conclusion, showing a symmetrical distribution centered around zero, with minimal skewness (-0.102804) and a kurtosis value of 3.460426, which is close to the normal benchmark value of 3.

Stability Test (CUSUM Test)



The CUSUM test plot shows the cumulative sum of recursive residuals, providing insight into the structural stability of the estimated model. The blue line, representing the cumulative sum, remains well within the 5% significance bounds (the two red dashed lines) throughout the sample period. This indicates that the model's parameters are stable over time, with no evidence of structural breaks or instability. Together,

these diagnostic tests affirm that the estimated model is both statistically robust and structurally reliable, meeting the key assumptions of normality and parameter stability, which enhances the credibility of the model's estimates and inferences. Let me know if you want this included directly in your document.

Discussion of Findings

The ARDL Error Correction Model (ECM)

regression results deliver essential knowledge about the connection between innovative financing approaches and economic growth in Nigeria. Economic growth receives sustained positive effects from crowdfunding volume (LCFV) because crowdfunding acts as an essential mechanism to mobilize capital which drives productive economic activities. Neubert (2019) and Iddris (2019) both agree that crowdfunding possesses transformative power for innovation and entrepreneurial activity and economic expansion in emerging economies. Short-run analysis of crowdfunding volume changes demonstrates why this financing method should be used to bridge economic funding gaps in Nigeria. A significant negative influence emerged from Public-private partnership investment (LPPI) during the long-run period on economic growth. The difficulties faced in implementing PPP management in Nigeria continue to persist because of inadequate institutional structures combined with corruption and regulatory uncertainties and poor project delivery performance. The obstacles faced during private sector involvement in public infrastructure development limit the opportunities for public benefits. Abdulkarim (2023) supports this finding by showing that structural inefficiencies constrain the effectiveness of development investments in Nigeria's agenda.

The exchange rate variable (LEXR) has a substantial negative impact on long-run economic growth which demonstrates the damaging influence that currency rate volatility has on investment stability and overall macroeconomic stability. Afolabi (2022) discovered that substantial exchange rate variations impair productive investment activities and reduces economic operational

efficiency. Exchange rate instability elevates the expenses of importing capital while creating investment ambiguity among both domestic and foreign investors thus leading to economic performance deterioration. The study confirmed Interest Rate (ITR) as a fundamental positive growth factor which appeared both within short-term and extended periods. The data indicates that monetary policy efforts which better match interest rates to market conditions will lead to increased productive investments and capital development. Afolabi (2022) and Abdulkarim (2023) agree with the findings that financial development and proper interest rate management promote economic growth.

The lack of long-run significance between foreign direct investment (FDI) and economic growth in Nigeria raises crucial problems regarding the quality and sectoral allocation of FDI inflows together with their absorptive capacity. The research conducted by Ehigiamusoe and Lean (2019) supports these findings by showing Nigerian FDI growth limitations stem from inadequate policy environments and weak domestic and foreign industry relationships. The underdeveloped state of venture capital market in Nigeria prevents LVCI from creating meaningful long-run effects on economic growth. Neubert (2019) noted that emerging economies face three major venture capital market limitations which reduce broad-based economic growth: inadequate legal frameworks, weak investor protection and insufficient deal flow.

Studies indicate that remittance inflows produce small negative effects in the long run which suggests most incoming remittances fuel consumption instead of investment for growth. The research by Paul and Omeje (2022) supports these results as

they established that remittances help households but fail to foster long-term economic growth because they lack investment channels for entrepreneurial ventures or infrastructure development. The analysis revealed that Trade openness (TOP) did not establish a significant long-run effect but it demonstrated positive and significant short-run results. Short-term economic adjustments require dynamic external trade linkages yet they face long-term limitations from structural trade deficits combined with weak export diversification and susceptibility to external shocks. Afolabi (2022) supports this observation when he explains that trade openness by itself does not produce sustainable economic growth unless policy measures exist to strengthen export competitiveness and industrial development. The error correction term (CointEq(-1)) displayed a correct sign along with high significance which validated the enduring connection between variables. The obtained result validates the use of the ARDL model as a suitable framework for studying how innovative financing mechanisms impact economic growth (Afolabi, 2022; Abdulkarim, 2023).

Conclusion and Recommendation

This study examined the impact of innovative financing mechanisms on economic growth in Nigeria, with a particular focus on crowdfunding, public-private partnerships, venture capital investments, remittances, and foreign direct investment, alongside key macroeconomic variables such as trade openness, interest rate, and exchange rate. The findings revealed that crowdfunding plays a crucial role in enhancing economic growth, highlighting its potential as an alternative financing source that addresses funding gaps and supports entrepreneurial development. However, public-private partnership investments exhibited a negative effect on

economic growth, emphasizing the persistent institutional, regulatory, and operational inefficiencies that hinder the successful implementation of PPP projects in Nigeria.

The results also demonstrated that exchange rate volatility significantly undermines economic growth, reinforcing the need for policies that promote exchange rate stability to enhance investor confidence and economic planning. Interest rates were shown to positively influence economic growth, indicating that efficient monetary policy management can contribute to capital formation and economic development. Conversely, remittances, often heralded as a vital source of external financing, demonstrated limited long-run impact, reflecting the predominant use of remittances for consumption rather than investment.

The absence of significant long-run effects for foreign direct investment and venture capital investments underscores the need to strengthen the regulatory environment, improve the ease of doing business, and foster deeper linkages between foreign investments, domestic enterprises, and innovation ecosystems. Trade openness showed positive short-run effects, highlighting the importance of external trade in driving near-term economic adjustments, though structural barriers appear to limit its sustained long-term impact.

Based on these findings, the study offers the following recommendations. First, policymakers should prioritize regulatory reforms and capacity building to enhance the effectiveness of public-private partnerships, ensuring that projects deliver measurable developmental impacts. Second, given the positive role of crowdfunding, financial sector regulators should create enabling environments that promote crowdfunding platforms, protect investors, and increase awareness among entrepreneurs and SMEs. Third, monetary authorities should continue

to pursue exchange rate stability policies to foster macroeconomic stability and improve Nigeria's attractiveness to both domestic and foreign investors.

Fourth, efforts should be made to channel remittances towards productive investment, including through diaspora bonds and investment-linked financial instruments that encourage the use of remittances for entrepreneurial ventures and infrastructure development. Fifth, strengthening the venture capital ecosystem requires improving investor protection, fostering innovation clusters, and enhancing legal frameworks to attract both domestic and international venture capital investments. Finally, trade policy should focus on diversifying Nigeria's export base, enhancing product quality, and improving trade infrastructure to maximize the benefits of trade openness.

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