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Investigating the Determinants of Private Savings in Nigeria: The Role of Financial Development

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A B S T R A C T

This study examines the relationship between financial development, capital formation, and private savings in Nigeria. The research utilizes the ARDL approach to analyze annual time series data from 1981-2021. The results indicate a significant positive impact of financial development and capital formation on private savings, while gross domestic product per capita and real interest rates have a negative impact. The study also finds a unidirectional causality from financial development and capital formation to private savings. The study recommends that policymakers focus on further developing the financial sector to encourage higher private savings and capital formation. Further research is needed to explore the specific mechanisms through which financial development and capital formation influence private savings in Nigeria, as well as longitudinal and comparative studies to provide valuable insights into the factors that drive private savings and capital formation in developing economies

INTRODUCTION

Neoclassical economic growth theories emphasize the importance of savings as the main source of capital accumulation, which is crucial for long-term economic growth. The Harrod-Domar growth model is an example of such theories, highlighting the role of savings and investments in driving economic growth, especially in developing countries (Charles & Monica, 2023). There are two conflicting perspectives on the relationship between financial development and private savings, as discussed in the literature by Ito and Chinn (2007). The first perspective suggests that financial development can positively impact private savings by providing more secure savings options and increasing savers' confidence. Conversely, the second perspective argues that financial development may negatively affect private savings by reducing the need for precautionary savings through increased access to consumer credit or housing finance (Osuji, 2020; SelçukAkçay, 2023; Nadabo, 2023a).

Capital formation, the process of accumulating the physical and human capital necessary for sustained economic growth, is critically dependent on savings. Higher private savings translate into greater domestic resources available for investment in infrastructure, productive capacity, and human capital development. This, in turn, drives economic expansion, generating higher incomes and potentially fueling further saving in a virtuous cycle (Adelakun, 2015; Nadabo, 2021; Surajdeen et al., 2023; Keho, 2023). However, in Nigeria, the linkage between savings and capital formation appears weak. Limited access to finance and inefficient allocation of resources impede the translation of savings into productive investment. Public investment, often constrained by fiscal deficits, falls short of filling the gap. Consequently, the cycle of saving, investment, and growth remains sluggish, perpetuating low productivity and hindering economic diversification (Ogunmuyiwa & Ekone 2017; Anthony-Orji, Orji, & Ogbuabor, 2021; Ugah, 2022).

In 1981, the private savings rate in Nigeria was 18.5% of GDP. This represented a relatively healthy level of savings compared to the declining trend seen in the early 2000s. However, by 2021, the private savings rate had decreased to 11.2% of GDP, indicating a continued downward trend in private savings in Nigeria over the past four decades. This represents a 39.5% decline in private savings as a percentage of GDP from 1981 to 2021.

LITERATURE REVIEW

Conceptual Framework

Concept of Saving

Savings is money that is not spent and is set aside for future use or investment. It can be in the form of money in a savings account, stocks, bonds, or physical assets like real estate or gold. Savings can be used for emergency expenses, retirement planning, or major purchases. It is important for personal financial management and economic growth, allowing individuals and businesses to accumulate capital for the future. Bulus (2021) defines savings as the money left over after spending and other obligations are deducted from earnings. Savings are safe but offer low rates of return, unlike investing, which

involves putting money at risk to grow wealth. Dalis (2022) states that savings are the money left over after spending, and people may save for various life goals such as retirement, a child's education, a home or car down payment, or emergencies.

Concept of Financial Development

The World Bank (2014) reports that financial sector development occurs when financial instruments, markets, and intermediaries ease the effects of information, enforcement, and transactions costs and then performs better job at providing the key functions of the financial sector in the economy. Fundamentally, financial sector development is about overcoming "costs" incurred in the financial system. This process of reducing the costs of acquiring information, enforcing contracts, and making transactions resulted in the emergence of financial contracts, markets, and intermediaries.

Financial development involves creating and improving financial systems and institutions, like banks and stock markets, as well as regulatory frameworks that facilitate financial transactions and the flow of capital in an economy. It includes developing financial instruments, providing financial services, ensuring public access to financial services, and improving the efficiency of financial markets. Financial development is crucial for economic growth as it helps with capital accumulation, resource allocation, and risk management (Schmidt-Hebbel, 2018; Aizenman et al. 2019).

Concept of Capital Formation

Capital formation refers to the process of increasing the stock of real capital in an economy. This includes the accumulation of physical capital such as machinery, equipment, and infrastructure, as well as human capital through investments in education and training. Capital formation is essential for economic growth and development as it enables increased production and productivity, leading to higher levels of income and living standards. It also allows for the adoption of new technologies and innovation, which can drive further economic progress. There are various ways in which capital formation can occur, including savings and investment, government spending on infrastructure and education, and foreign direct investment. Encouraging capital formation requires policies that promote savings, investment, and entrepreneurship, as well as a supportive regulatory environment and access to finance (Smith, 1776; Harrod, 1939; Solow, 1956, Lucas, 1988; World Bank, 2021).

Theoretical Literature

The Harrod-Domar model, developed in the 1930s and 1940s, is a key concept in economic growth theory. It explains the relationship between savings, investment, and economic growth. The model suggests that economic growth is directly related to the amount of capital available for investment. It also emphasizes the role of savings in driving economic growth. To achieve sustained economic growth, a country must maintain a high rate of savings and investment. The model also highlights the importance of maintaining a balance between savings and investment to avoid shortages or excesses of capital. Overall, the model provides a valuable framework for understanding the relationship between savings, investment, and economic growth.

McKinnon (1973) and Shaw (1973) proposed the financial repression hypothesis, which suggests a connection between financial development and savings. They argue that the real interest rate is crucial for savings, investment, and economic growth. The hypothesis emphasizes the role of the financial sector in mobilizing savings and transferring them from households to investors. Government policies, such as imposing limits on deposit and lending rates, can hinder growth. Nzotta (1999) also emphasized the importance of the financial sector in mobilizing and allocating financial resources, offering various risk return profiles, and efficiently transferring savings to those who use them for investment or consumption.

Empirical Literature

Asamoah (2008) investigated the impact of financial sector reforms on savings, investments, and gross domestic product in Ghana and reported a positive and significant relationship between financial reforms and savings. On the other hand, Quartey (2005) used a multivariate VAR and vector error correction model to study financial sector development, savings mobilization, and poverty reduction in Ghana and found no significant relationship between financial sector development and savings mobilization. Similarly, Odhiambo (2008) conducted a study on the relationship between savings and economic growth in Kenya, using data from 1991 to 2005 and applying causality tests. The study found evidence of Granger causality between savings and economic growth. Based on these results, Odhiambo concluded that savings play a critical role in driving the development of the financial sector and ultimately contributing to economic growth.

Horioka and Yin (2010) investigated the relationship between financial development and savings across 12 developing Asian economies, using data from 1996 to 2007. They found that the relationship between financial development and savings is non-linear, taking a humped-shaped curve. Abu (2010) examined the relationship between economic growth and savings using data from 1970 to 2007. The study found evidence of cointegration among the variables and concluded that there is a positive relationship between savings and economic growth. The study also found that causality runs from economic growth to savings.

Iganiga (2010), who used the least square technique to evaluate the Nigerian financial sector reforms within the framework of a behavioural model, financial reforms had a positive and significant impact on domestic savings. Similarly, Mathew and Olowe (2011) found that financial liberalization had a positive and significant impact on savings in their study on the impact of a liberalized financial system on savings, investment, and growth in Nigeria. Ang (2011) used the auto-regressive distributed lag (ARDL) model to investigate the relationship between savings mobilization, financial development, and liberalization in Malaysia. The study produced two contradictory results: a positive relationship between financial deepening and private savings, and a negative relationship between financial liberalization and private savings.

Misztal (2011) examined the causal relationship between economic growth and savings in developed, emerging and developing countries from

1980 to 2010, using cointegration and Granger causality analysis. The study found evidence of a unidirectional causal relationship running from gross domestic savings to gross domestic product in developed, emerging and developing countries. Udousoro, Eko, and Ubong (2013) investigated the direction of causality between savings and economic growth in Nigeria from 1980 to 2010 using a trivariate dynamic Granger causality model. They found that growth-led savings is predominant for Nigeria, indicating a uni-directional causality between economic growth and savings in the country.

Nyanzi and Kaberuka (2013) investigated the impact of financial sector liberalization on private financial savings in Uganda using the Granger and Engel framework as well as structural change analysis. Their study revealed a positive relationship between financial liberalization and private financial savings. Najarzadeh, Reed, and Tasan (2014) investigated the relationship between total savings and non-oil economic growth in Iran using annual data from 1972 to 2010 and the autoregressive distributed lag model. They found that there is a significant positive impact of savings on both total economic growth and non-oil growth, and vice versa. Moreover, the study revealed a long-run bi-directional causal relationship between total and non-oil growth and savings.

Ewetan, Ike, and Urhie (2015) conducted an analysis to investigate the relationship between financial sector development and domestic savings in Nigeria using an autoregressive distributed lag model. The study used data from 1980 to 2012 and collapsed three measures of financial development into a single composite measure due to their high correlation. The findings suggest that financial development has a positive and significant impact on domestic savings in Nigeria.

Ewetan et al (2015) analyzed the relationship between financial sector development and domestic savings in Nigeria using time series data from 1980 to 2012. They used a bound test co-integration approach to account for the mixed integration order of the variables and small sample size, and constructed a composite index from three alternative financial development measures. The study found a long-run relationship between financial sector development and domestic savings in Nigeria, with the composite index of financial development having a positive and significant impact on domestic savings. The authors recommended that the government should continue to implement financial sector reforms to further enhance domestic savings.

Rehman et al. (2015) conducted a study on the relationship between financial development, savings, and economic growth in Bahrain from 1981 to 2013, using the Vector Autoregression (VAR) model. They used M2/GDP to measure financial development, GDP per capita to measure economic growth, and domestic savings/GDP to measure savings. The study found a bi-directional causality between savings and economic growth in Bahrain, but did not provide evidence for either the supply-leading or demand-following hypothesis.

Elias and Worku (2015) conducted a study to investigate the causal relationship between economic growth and savings in East Africa from 1981 to

2014. They used the vector error correction (VEC) method and Johanson cointegration to analyze data from Uganda, Kenya, and Ethiopia. The study found a significantly positive relationship between domestic savings and economic growth for Uganda and Ethiopia. The Granger causality results also showed that there is a unidirectional causality running from economic growth to gross domestic savings for both countries. The authors concluded that economic growth has a positive impact on gross domestic savings in Ethiopia and Uganda.

Odeh, Effiong, and Nwafor (2017) conducted an empirical study to analyze the impact of savings and investment on economic growth in Nigeria from 1970 to 2015. They used the error correction method and identified gross domestic savings, fixed capital formation, labor force, and savings facilities as the main determinants of economic growth in Nigeria. The study revealed that these factors played significant roles in promoting economic growth in Nigeria during the period under consideration. The findings suggest that policies aimed at promoting savings, investment in fixed capital, and improving the labor force could be crucial in promoting economic growth in Nigeria. Overall, the study emphasizes the importance of savings and investment in driving economic growth and provides useful insights for policymakers in Nigeria.

Ikubor (2019) this study empirically investigates the connection between financial sector development and savings mobilization in Nigeria between 1986 and 2017, utilizing an error correction model and co-integration analysis. The findings reveal that interest rates, used as a proxy for financial development, have a positive and significant impact on domestic savings in Nigeria. Rodrigo et al., (2020) this study analyzes the savings patterns in Chile over a period spanning from 1960 to 2013. The research identifies financial market deepening, tax reforms and an increase in the marginal productivity of capital as the primary factors driving savings in Chile.

SelçukAkçay, (2023) study the determinants of private savings in Turkey: The role of financial development this study uses Autoregressive Distributed Lag (ARDL) procedure and the Fourier Toda-Yamamoto causality framework. The study findings the ARDL bounds test supports the presence of a long-run equilibrium relationship between private savings and its determinants; financial development affects private savings nonlinearly in an inverted U-shaped pattern, and No causality relationship is observed between private savings and financial.

IMPLEMENTATION AND METHODS

Theoretical Framework

This study is based on Harrod-Domar model that economic growth depends on the amount of capital that is available for investment, and that the rate of capital accumulation is proportional to the rate of savings. The Harrod-Domar model consisted of two parts, a supply-side model of production and a demand-side model of demand. For the supply-side, the Harrod-Domar model posited two equations: A constant marginal product of capital means the economy exhibits a constant capital-output ratio $K/YS = \gamma$, so that the supply of

output YS is proportional to the stock of capital K:YS = 1/γ K. In a steady state of production, the quantity of production YS is proportional to the capital K invested in production capacity by the factor of (1/γ).

An increase in capital ΔK creates a proportional increase in production ΔYS. Δ = Δ K Y σ s Increase of Production ΔYs occurred proportionate to an increase in Capital ΔK. The hypothesis of the Harrod-Domar model is that all savings S goes into productive investment IS and all productive investment goes into capital K:S = IS = K. Thus the key assumption is that Savings (S) in an economy needs to be invested into Production (P).

Model Specification

This study's model is primarily based on those estimated by Sahoo and Dash (2013), Grigoli et al. (2018), Aizenman et al. (2019), and Akçay, (2023).

$PSV_t = \beta_0 + \beta_1 FID_t + \beta_2 RIR_t + \beta_3 GDP_t + \beta_4 CFM_t + \varepsilon_t$ (1) *Where* β_0 *to* β_4 are the parameters estimated and ε_t is the stochastic error term, PSV is private savings, FID is financial development index, RIR is real interest rate, GDP is the gross domestic product per capita and CFM is the capital formation.

The ARDL bounds test was used to examine the long-term relationship between variables. The decision rule states that if the computed F-statistic is greater than the upper bound I(1), we fail to reject the null hypothesis of no cointegration among the variables. If the computed F-statistic is smaller than the lower bound I(0), we accept the null hypothesis of no cointegration between the variables. If the F-statistic falls between I(0) and I(1), the inference will be inconclusive.

One of the main advantages of ARDL modeling is its flexibility, as it can be applied when the variables have different orders of integration (Pesaran and Shin 1997). The ARDL model is also relatively more efficient when dealing with small sample sizes. Additionally, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation. The ECM integrates the short-term dynamics with the long-term equilibrium without losing long-term information. The ARDL model for the short-run and long-run coefficients is indicated in equation (2) below

$$\Delta PSV_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta PSV_{t-i} + \sum_{i=0}^{q} \beta_{2i}\, \Delta FID_{t-i} + \sum_{i=0}^{q} \beta_{3i}\, \Delta RIR_{t-i} + \sum_{i=0}^{q} \beta_{4i}\, \Delta GDP_{t-i} + \sum_{i=0}^{q} \beta_{5i}\, \Delta CFM_{t-i} + \phi_1 PSV_{t-1} + \phi_2 FID_{t-1} + \phi_3 RIR_{t-1} + \phi_4 GDP_{t-1} + \phi_5 CFM_{t-1} + \varepsilon_{1t} \quad (2)$$

In the above equations, PSV is the dependent variable, PSV is private savings, FID is financial development index, RIR is real interest rate, GDP is the gross domestic product per capita and CFM is the capital formation. The term with ϕ s corresponds to the long-run relationship, while the terms with

summation signs represent the short-run. ϕ is the long run and β is the short-run coefficients.

Error Correction Model (ECM)

After establishing long run relationship among the variables, and estimating the long-run parameters of the ARDL model (2), the short-run parameters, will be obtained by an error correction model (ECM). The ARDL specification of the ECM is represented in equations (3) below:

$$\Delta PSV_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta PSV_{t-i} + \sum_{i=0}^{q} \beta_{2i}\, \Delta FID_{t-i} + \sum_{i=0}^{q} \beta_{3i}\, \Delta RIR_{t-i} + \sum_{i=0}^{q} \beta_{4i}\, \Delta GDP_{t-i} + \sum_{i=0}^{q} \beta_{5i}\, \Delta CFM_{t-i} + \theta_1 ECT_{t-1} + \mu_t \quad (3)$$

In equation (3), PSV is the dependent variable, PSV is private savings, FID is financial development index, RIR is real interest rate, GDP is the gross domestic product per capita and CFM is the capital formation. μ_t is the error term, The ECT is the error-correction term; θ is the speed of adjustment parameter with negative sign; β is the short-run dynamic coefficient of the model's adjustment to long-run equilibrium

Pairwise Granger Causality Test

This test was conducted to check the direction of causality among the variables

$$\Delta PSV_t = \alpha_y + \sum_{i=1}^{n} \varphi_y\, \Delta PSV_{t-i} + \sum_{i=1}^{n} \lambda_y\, \Delta FID_{t-i} \quad (4)$$

$$\Delta FID_t = \alpha_x + \sum_{i=1}^{n} \varphi_x\, \Delta FID_{t-i} + \sum_{i=1}^{n} \lambda_x\, \Delta PSV_{t-i} \quad (5)$$

$$\Delta RIR_t = \alpha_y + \sum_{i=1}^{n} \varphi_y\, \Delta RIR_{t-i} + \sum_{i=1}^{n} \lambda_y\, \Delta PSV_{t-i} \quad (6)$$

$$\Delta GDP_t = \alpha_x + \sum_{i=1}^{n} \varphi_x\, \Delta GDP_{t-i} + \sum_{i=1}^{n} \lambda_x\, \Delta PSV_{t-i} \quad (7)$$

$$\Delta CFM_t = \alpha_x + \sum_{i=1}^{n} \varphi_x\, \Delta CFM_{t-i} + \sum_{i=1}^{n} \lambda_x\, \Delta PSV_{t-i} \quad (8)$$

Data Source and Descriptions of Variables

This study utilized secondary data. The data included annual time series data from 1981-2021 for variables such as PSV is private savings, FID is financial development index, RIR is real interest rate, GDP is the gross domestic product per capita and CFM is the capital formation all are source from World Bank (World Bank Indicators, 2023).

Table 1. Data Source and Descriptions of Variabels

Variables	Descriptions	Sources
Private Savings (PSV)	Private savings is the money an individual set aside from their income instead of spending it. This can include savings accounts, retirement accounts, investments, and other ways of saving for personal use or emergencies. It's important for building financial security and reaching long-term financial goals.	WDI, (2023)
Financial Development Index (FID)	The Financial Development Index (FDI) measures a country's financial development by considering factors like the depth, efficiency, stability of financial institutions, and the size and liquidity of financial markets. It is used to compare and track changes in financial development over time.	IMF, (2023)
Real Interest Rate (RIR)	The real interest rate is the nominal interest rate adjusted for inflation, representing the true cost of borrowing or the real return on investment after taking inflation into account. It is calculated by subtracting the inflation rate from the nominal interest rate and is important for investors and borrowers to understand as it provides a more accurate measure of the cost of borrowing and the potential return on investment.	WDI, (2023)
Gross Domestic Product Per Capita (GDP)	Gross Domestic Product (GDP) per capita is a measure of the average economic output per person in a country. It is calculated by dividing the country's total GDP by its population. This measure provides an indication of the standard of living and economic well-being of the residents of a country. A higher GDP per capita generally indicates a higher standard of living and a more prosperous economy.	WDI, (2023)
Capital Formation (CFM)	Gross fixed capital formation (GFCF) is a macroeconomic concept that measures the total value of physical assets (such as machinery, equipment, and buildings) that are produced for use in the production of goods and services. It represents the net increase in physical assets within an economy and is an important indicator of investment in fixed assets. GFCF is a key component of a country's gross domestic product (GDP) and is used to assess the level of investment in an economy.	WDI, (2023)

Diagnostics and Stability Tests

To ensure the accuracy of the models for policy recommendations, three tests were conducted. First, a normality test was performed using a Histogram-normality test. Second, a serial correlation test was conducted using the Breusch-Godfrey test. Third, a Heteroskedasticity test was performed using the Breusch-Pagan-Godfrey test. Finally, model stability was tested using cumulative sum of recursive residuals (CUSUM) and the cumulative sum of square tests (CUSUMSQ).

RESULTS AND DISCUSSION

Descriptive Statistics

The summary of various descriptive statistics was depicted in table 4.1the mean, which is a measure of central tendency, represents the average value that a variable assumes, over time. The mean value of all the variables ranged from 3.545to 28.666 However, the PSV has the highest mean value with 28.666, lowest standard deviation 0.549, followed by the FID with 27.283 mean and Standard deviation 2.663, followed by CFM with 24.011 and standard Deviation 2.770, followed by the RIR with the 19.314 and standard deviation 17.437 and GDP 3.545 and Standard deviation –0.451 mean value.

Table 2. Descriptive Statistics Test Result

Variables	PSV	FID	CFM	GDP	RIR
Mean	28.666	27.283	24.011	3.545	19.314
Median	28.440	27.883	24.056	4.528	19.556
Maximum	29.563	30.293	27.753	5.724	20.194
Minimum	27.952	22.698	19.130	-0.451	17.437
Std. Dev.	0.549	2.663	2.770	1.954	0.709
Skewness	0.393	-0.507	-0.230	-0.935	-1.322
Kurtosis	1.696	1.816	1.844	2.461	3.749
Jarque-Bera	3.573	3.749	2.386	5.839	11.642
Probability	0.168	0.153	0.303	0.054	0.003
Observations	40	40	40	40	40

Source: author's computation (2023)

Correlation Analyses

This analysis was conducted to analyze the relationship among the coefficients in the model and private savings in Nigeria

Table 3. Correlation Matrix

Variables	PSV	FID	CFM	GDP	RIR
PSV	1.000				
FID	0.910	1.000			
CFM	0.955	0.977	1.000		
GDP	0.819	0.963	0.934	1.000	
RIR	0.461	0.748	0.667	0.814	1.000

Source: author's computation (2023)

From the table 2 above it indicated that there is a strong relationship among the variables, this shows that there exist a strong and positive relationship between financial development and private savings in Nigeria, also there exist a strong and positive relationship between capital formation and private savings in Nigeria.

Table 4. Unit Root Test Results

	Level		First Difference		
Variables	**ADF**	**PP**	**ADF**	**PP**	**Order of integration**
PSV	-2.421	-2.567	-3.340**	-3.180**	I(1)
FID	-1.134	-1.134	5.288***	-7.227***	I(1)
CFM	-2.591	-2.748	7.080***	11.905***	I(1)
GDP	3.143**	-2.293	-	-	I(0)
RIR	-1.795	-1.743	-6.10***	-6.144***	I(1)

Source: Author's computation (2023)

Note: Schwarz Information Criterion (SIC) was used to select the optimum lag length in the ADF test. ***,** and * indicated statistically significant at 1%, 5% and 10% respectively.

The unit root test results in Table 3 show that PSV, FID, CFM, and RIR achieved stationarity at first difference for both the ADF and PP, except for GDP, which was found to be stationary at the level. The mixed order of integration among these variables suggests the need for the adoption of the ARDL approach for this study. The next step was to present the cointegration result.

Cointegration Test Result

Having confirmed the stationarity status of the variables, to confirm the second justification for the adoption of the ARDL approach, cointegration test was conducted to determine whether long-run relationship exist among the variables. In this regard, the ARDL bounds test was conducted. The decision rule stated, if the computed F-statistic found greater than the upper bound I(1), we fail to reject the null hypothesis of no cointegration among the variables . But if the computed F-statistic is smaller than the lower bound I(0), the null hypothesis of no cointegration between the variables is accepted. In the event that the F-statistic falls between I(0) and I(1), the inference will be inconclusive. The bounds testing results is reported in table 4

Table 5. ARDL Bound Test for Cointegration Resul

F- Statistics	**K**	**Significance**	**Lower(bound)**	**Upper(bound)**
		10%	2.68	3.53
9.655***	4.92	5%	3.05	3.97
		2.5%	3.40	4.36
		1%	3.81	4.92

Source: Author's compilation (2023)

Note: *** denotes statistically significance at 1% level. Schwarz Information Criterion (SIC) was used to automatically select the optimum lag lengths. The Selected lags for ARDL Model are: (3, 2, 0, 3, 4).

The bounds test result shows that the computed F-statistic (9.655) exceeds the 1% upper bound (4.92), suggesting the presence of cointegration or a long-term relationship among the variables. This indicates that while the relationship among the variables may be disrupted in the short term, equilibrium is achieved in the long run. With the confirmation of cointegration among the variables, we then proceeded to estimate both the short-term and long-term coefficients.

Table 6. Long Run and Short Run Estimated Coefficient of the ECM

Panel A: Long-run Coefficients - Dependent variable is PSV			
Variables	**Coefficients**	**t-statistics**	**P-Value**
FID	0.051	2.649	0.018
CFM	0.033	2.247	0.040
GDP	-0.203	-13.305	0.000
RIR	0.024	0.774	0.451
Panel B: Short-run Coefficients - Dependent variable is ΔPSV			
Δ (FID)	0.058	5.419	0.000
Δ (FID(-1))	0.041	3.961	0.001
Δ (CFM)	0.025	3.671	0.002
Δ (GDP)	-0.035	-3.076	0.008
Δ (GDP(-1))	0.106	5.268	0.000
Δ (GDP(-2))	0.059	3.975	0.001
Δ (RIR)	-0.055	-3.139	0.007
Δ (RIR(-1))	-0.085	-4.548	0.000
Δ (RIR(-2))	-0.005	-0.514	0.615
Δ (RIR(-3))	0.041	5.116	0.000
C	23.894	9.187	0.000
ECT_{t-1}	-0.935		0.000
R^2	0.885		
F-statatistic	6.807		0.000

Source: author's computation (2023).

The results of the estimated long run and short run coefficients of ECM were reported in table 5. In panel A, it was found that in the long run, both increases in financial development (FID) and capital formation (CFM) have a significant positive effect on private savings (PSV) in Nigeria. Specifically, a 1% increase in financial development (FID) leads to a 0.051% increase in private savings (PSV), and a 1% increase in capital formation (CFM) leads to a 0.033% increase in private savings (PSV) in Nigeria. Additionally, a 1% increase in gross domestic product per capita (GDP) leads to a -0.203% decrease in private

savings (PSV), and a 1% increase in real interest rates (RIR) leads to a 0.024% increase in private savings (PSV) in Nigeria.

Panel B indicates the result of the short run coefficients, which align with the long run result. It was found that in the short run, a 1% increase in financial development (FID) leads to a 0.058% increase in private savings (PSV), and a 1% increase in capital formation (CFM) leads to a 0.025% increase in private savings (PSV). On the other hand, a 1% increase in RIR in the short run leads to a -0.05% decrease in private savings (PSV) in Nigeria, and a 1% increase in gross domestic product per capita (GDP) leads to a -0.03% decrease in private savings (PSV).

The coefficient of the error correction term lagged by one period (ECTt-1) is negative and significant at 1%, meeting our expectations. This indicates that 93.5% of any deviations from the equilibrium are corrected within one year by the variables in the model to restore the imbalances in the economy. This shows that the model has a very fast speed of adjustment to the long run effect when there is a shock in the short run.

The findings of this study are in line with several theories and empirical studies. For example, the positive effect of financial development on private savings aligns with the financial liberalization theory of McKinnon (1973) and Shaw (1973), which suggests that an increase in financial development leads to greater access to financial services and therefore encourages savings. Similarly, the positive effect of capital formation on private savings is consistent with the theory of capital accumulation, which posits that an increase in capital formation leads to higher income and therefore higher savings. The negative effect of gross domestic product per capita on private savings in both the long run and short run is in line with the life cycle hypothesis, which suggests that as income increases; individuals save less because they anticipate higher future income and therefore do not need to save as much. Additionally, the positive effect of real interest rates on private savings aligns with the theory of inter-temporal consumption, which suggests that higher interest rates incentivize individuals to save more in order to consume in the future.

These findings are also supported by empirical studies in the field of economics and finance. For example, research by Levine and Zervos (1998) found a positive relationship between financial development and savings rates across countries, while studies by Feldstein (1974) and Modigliani and Brumberg (1954) have provided empirical evidence for the impact of income and interest rates on savings behavior. Overall, the results of this study are consistent with existing theories and empirical research on the determinants of private savings.

Result of Diagnostic Tests

The results of diagnostic tests reported in Table 6 showed that the ARDL model passes all tests including serial correlation, functional form, normality and heteroscedasticity. Thus the estimated relationship is free from problems of serial correlation and heteroscedasticity. In addition, normality test was found satisfied and there is no omitted variable bias.

Table 7. Results of Diagnostic Tests

Tests	F-statistic
Normality (Jarque -Bera Test Statistics)	0.407
Serial Correlation (Breusch - Godfrey LM Test)	0.202
Heteroscedasticity (Breusch – pagan – Godfrey)	0.464
Specification Error (Ramsey RESET Test)	0.660
Stability test (CUSUM & CUSUMSQ)	Stable

Source: Authors compilation (2023)

Table 8. Pairwise Granger Causality Test Result

Null Hypothesis:	F-Statistic	Prob.	Hypothesis Accept/Reject	Causality
FID does not Granger Cause PSV	9.047	0.005	Reject	Unidirectional
PSV does not Granger Cause FID	0.105	0.748	Accept	No causality
CFM does not Granger Cause PSV	12.021	0.002	Reject	Unidirectional
PSV does not Granger Cause CFM	0.191	0.665	Accept	No causality
GDP does not Granger Cause PSV	6.832	0.013	Reject	Unidirectional
PSV does not Granger Cause GDP	0.000	0.987	Accept	No causality
RIR does not Granger Cause PSV	4.156	0.049	Reject	Unidirectional
PSV does not Granger Cause RIR	0.091	0.765	Accept	No causality

Source Author's computation (2023)

A pair wise granger causality test was conducted to examine the causal relationship among financial development (FID) to private savings (PSV), capital formation (CFM) to private savings (PSV), gross domestic product per capita (GDP), and real interest rates (RIR) to private savings (PSV). The results in the table 7 indicate that financial development (FID) granger causes private savings (PSV), while private savings (PSV) does not granger cause financial development (FID) at a 5% level of significance. This suggests a unidirectional causality from financial development (FID) to private savings (PSV). Similarly, there is a unidirectional causality from capital formation (CFM) to private savings (PSV), as capital formation (CFM) granger causes private savings (PSV), and private savings (PSV) does not granger cause capital formation (CFM).

The study's findings align with the theory of financial development and economic growth, indicating that a well-developed financial system can lead to higher private savings and capital formation. Empirical studies by Levine and Zervos (1998) and Beck et al. (2000) support this, showing a positive impact of financial development on savings and investment. Additionally, the one-way causality from financial development and capital formation to private savings is consistent with the theory of financial deepening, which suggests that a more

developed financial system can lead to increased savings and investment. Studies by Demirguc-Kunt and Levine (1996), King and Levine (1993) and Akçay, (2023) also support this, demonstrating that financial deepening leads to higher savings and investment rates (Nadabo, 2023b; Nadabo, & Dakyong, 2023).

Moreover, the lack of causality from private savings to financial development and capital formation is consistent with the idea that savings and investment are driven by factors such as income, interest rates, and financial development, rather than the other way around. Studies by Deidda and Fattouh (2002) and Greenwood and Jovanovic (1990) support this, showing that savings and investment are influenced by macroeconomic and financial factors, rather than being the drivers of economic growth themselves (Nadabo, Dakyong, & Ismail, 2024).

CONCLUSIONS AND RECOMMENDATIONS

The study found that financial development and capital formation have a significant positive impact on private savings in Nigeria, while gross domestic product per capita and real interest rates have a negative impact. The results are consistent with economic theories and empirical studies, indicating that a well-developed financial system and increased capital formation can lead to higher private savings. The lack of a causal link between private savings and financial development and capital formation suggests that savings and investment are influenced more by macroeconomic and financial factors, rather than being the main drivers of economic growth themselves.

Based on the findings, the study recommends that policymakers in Nigeria should focus on further developing the financial sector to encourage higher private savings and capital formation. This can be achieved through measures such as improving access to financial services, promoting financial literacy, and creating an enabling environment for investment. Additionally, efforts to increase income levels and reduce real interest rates can help to boost private savings in the country.

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Further research is needed to explore the specific mechanisms through which financial development and capital formation influence private savings in Nigeria. Additionally, longitudinal studies could provide insights into the long-term trends and patterns of private savings, and how they are affected by changes in the financial sector and macroeconomic conditions. Furthermore, comparative studies across different countries and regions could provide valuable insights into the factors that drive private savings and capital formation in developing economies.

FURTHER STUDY

This research still has limitations, so further research needs to be carried out regarding the topic of the Analysis of Students' Interest in Saving Student Savings Products. to perfect this research and increase insight for readers.

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