

Does the deposit interest rate stimulate savings in West Africa?

An application of dynamic-panel data analysis

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Abstract. Saving is a crucial step towards investing. Several factors influence the decision to save, including religion, economic conditions, cultural attitudes and the interest rate on savings accounts. This study investigates low savings rates in West Africa and tries to find out whether higher interest rate would stimulate regional saving. The lack of empirical understanding of how interest rate affects saving behaviour challenges economic development. Using the life-cycle hypothesis, the study analysed savings as a function of a deposit interest rate, *per capita* income and the inflation rate through panel autoregressive distributed lag analysis. The findings show that deposit interest rate does not significantly impact savings in the region, in contrast to *per capita* income and inflation. The conclusion of the study is that the relationship between interest rates and savings is complex and influenced by multiple factors other than the deposit interest rate. The study suggests implementing policies that promote long-term investment strategies beyond relying on interest rates, which helps balance immediate investments with savings and encourages firms to set aside funds for future use.

Keywords: interest rate, dynamic panel, savings, West Africa

JEL: E21, C23, E43, O16

1. Introduction

Savings are vital for the economic development of West African countries, providing a basis for investment, consumption and financial stability. Several factors influence the decision to save, including religion, economic conditions, cultural attitudes and interest rates (deposit rates) on savings accounts. Interest rates significantly affect the saving behaviour. Higher rates generally encourage more savings due to attractive returns, while lower rates may lead consumers to spend instead. This relationship can impact a country's overall savings rate and, subsequently, its economic growth.

In West Africa, people's responses to changes in interest rates are influenced by factors like inflation, economic situation and financial literacy (World Bank, 2020b), while Babalola and

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Abdul (2022) suggested that the financial security situation, the access to the saved funds and the possibility of quick cash transfers, among other factors, are key to savings. High interest rates may not encourage savings during periods of high inflation, and cultural practices, such as traditional saving methods and informal savings clubs, can sometimes outweigh the influence of banks. Policymakers need to consider these cultural factors to effectively increase savings rates.

Several economic sectors are operated in the region, e.g. agriculture, mining, manufacturing and services (African Development Bank, 2021). At the same time, issues like poverty, income inequality and limited access to financial services remain significant challenges (World Bank Group, 2019a). Understanding this economic landscape is essential for addressing attitudes towards savings and the effect of interest rates.

The rates at which savings accounts earn interest play a crucial role in shaping saving habits and are determined by the central banks' monetary policy choices and factors such as inflation, fluctuations of the currency exchange rates, availability of funds and the economic data.

The savings buildup in West Africa affects investment and economic growth (African Development Bank, 2021). Whether it is caused by appealing interest rates or by some other factors, it can offer a secure funding source for investing. More investments can lead to a boost in economic growth, employment opportunities and a decrease in poverty levels. Hence, it is essential to examine how interest rates affect savings to comprehend their possible effects on the region's economic growth and advancement.

In West Africa, several factors enhance savings among individuals and communities. A key motivator is the desire for financial security, as many save for emergencies, healthcare, education or small business investments. This need drives people to set aside funds whenever possible. Access to formal financial institutions is vital in increasing savings rates. When banks and financial services are available and people understand the benefits of saving, a culture of saving develops. Financial literacy initiatives can help individuals see the advantages of formal accounts over informal methods of savings. Cultural attitudes play a role as well. Informal savings groups, like rotating savings and credit associations, provide social support and encourage collective saving, often being more trusted than formal banking systems in areas where the trust in banks is low.

This study explores low savings levels in West Africa and, as stated above, tries to find out how interest rates (more specifically, deposit interest rates) influence the saving behaviour. The region's diverse economic conditions, varying financial literacy and cultural attitudes all complicate policy development. Fluctuating Treasury bill rates and inflation deter individuals

from saving, while limited financial literacy and access to savings products promote a consumption-oriented mindset. Therefore, the objective of this study is to determine if higher interest rates effectively increase savings in the West African region.

2. Literature Review

2.1. Conceptual Review

Interest rates are a fundamental economic tool, serving as a crucial indicator of financial health and the direction of monetary policy. The Central Bank of Nigeria (CBN) defines interest rates as the cost of borrowing funds or the return on deposited funds, expressed as a percentage of the principal amount. The CBN emphasises that the rates are influenced by monetary policy decisions, inflation expectations, and the broader economic environment, highlighting their dual role in facilitating economic growth and maintaining stability (CBN, 2023).

The Central Bank of West African States (French: Banque Centrale des États de l'Afrique de l'Ouest, BCEAO) sees interest rates as a compensation for the use of capital, reflecting the associated risks and opportunity costs of lending and borrowing. The BCEAO adjusts the rates according to the economic conditions to maintain financial stability and promote investment within the West African Economic and Monetary Union (Diop & Diaw, 2023).

The Bank of Ghana describes interest rates as the cost of money, highlighting their impact on savings, investment and consumption, all of which are vital for the economic development (Bank of Ghana, 2022).

The Central Bank of Liberia, on the other hand, defines interest rates as a compensation that borrowers pay to lenders, which can significantly affect consumer spending and business investment vital for growth (Central Bank of Liberia, 2023).

Finally, according to the Bank of Sierra Leone, interest rates indicate the cost of financing and are influenced by inflation, monetary policy and the demand for credit (African Development Bank Group, 2025).

In summary, as observed by Babalola (2021), Babalola and Abdul (2022) and Babalola, Yelwa and Olaniyi (2023), interest rates represent the costs of loans or the returns for providing capital, assuming various forms such as deposit (savings) interest rate, fixed/time interest rate and treasury bill rates. Using the concept of most central banks in the region, there are two categories of interest rates, namely the lending interest rate, which is the cost of borrowing or

obtaining a loan, and the deposit interest rate, which is the reward for depositing funds as savings. This study employed the deposit interest rate as a measure of interest rate since it affects savings to the largest extent in most regions of the world.

Savings have been defined by scholars from various perspectives, referring both to individual and aggregate levels. Mankiw (2014) defines savings as the portion of disposable income that is not consumed but instead set aside for future use. This definition focuses on individual behaviour and emphasises the act of withholding a part of income for future purposes. Embracing a macroeconomic standpoint, Keynes (1936) introduced the concept of aggregate savings, which refers to the sum of individual savings within an economy. Keynes viewed savings as the difference between income and consumption, highlighting its role in determining the level of investment and overall economic activity.

Building on Keynes' perspective, Feldstein (1974) defined national savings as the sum of private and government savings, where government savings represent the difference between government revenue and expenditure. This broader definition acknowledges the impact of both private and public sectors on the overall savings within an economy.

Several years later, Blanchard et al. (2017) came up with a similar definition of savings. Their focus was on finding out how various sectors influence overall savings in an economy.

2.2. Theoretical Review

The classical theory of savings is a fundamental economic concept that explains how saving behaviour is affected by interest rates, income and consumption preferences. At the core of this theory is the belief that interest rates serve as critical incentives for individuals to save. When interest rates are higher, individuals are more likely to increase their savings, as they can earn a greater return on their deposited funds. Conversely, lower interest rates may discourage savings, nudging individuals toward immediate consumption. This relationship between interest rates and the saving behaviour underscores the importance of monetary policy in shaping economic conditions (Gertler & Kiyotaki, 2010). The above theory refers to the deposit interest rate rather than the lending interest rate or the official interest rate, which is the policy rate in most economies.

The life-cycle theory of savings posits that individuals save throughout their lifetime to smooth consumption patterns and maintain their desired standard of living (Modigliani & Brumberg, 1954). This theory suggests that individuals anticipate changes in income and expenses over their lifetime and adjust their savings accordingly. During their younger years,

individuals typically save a smaller portion of their income to support consumption during retirement. As they age and approach retirement, their savings usually increase to ensure a comfortable post-work life. The life-cycle theory emphasises the importance of long-term planning and intertemporal consumption decisions in shaping the saving behaviour.

The permanent income theory states that people base their savings decisions on their long-term average income rather than their current income (Friedman, 1957). According to this theory, individuals view temporary fluctuations in income as transitory and adjust their savings accordingly. They save a portion of their income to maintain a stable level of consumption over time, even when faced with temporary changes in income. The permanent income theory indicates that individuals prioritise stable consumption patterns and use savings as a tool to smooth income fluctuations.

2.3. Empirical Review

Muntanga (2020) researched how interest rates affected savings and investment in Zambia from 1980 to 2018. The study used simple linear regression techniques. The research results indicate that interest rates had a significant effect on net savings in Zambia, among other variables. However, the study's result was based on a simple analysis which is static, meaning that this work analysed the instant effect, but in reality, it takes some time before a variable responds to change, i.e. there is a lag period.

Obeh and Brotoboh (2021) conducted a study on how the interest rate spread affected savings in Nigeria from 1981 to 2019. Multiple regression analysis and the Johansen co-integration test were used to validate the long-term connection in the model. Their findings indicate that the interest rate spread had no significant effect on savings. The issue with this work, however, is that they ran the analysis through two eras of interest rate policies, i.e. before and after the liberalisation of the interest rates in 1986, and their analysis did not capture any structural break period. This liberalisation made the interest rate to float according to the market forces of demand and supply.

Babalola and Abdul (2022) analysed the use of interest rates to encourage saving, which is a popular topic. In this connection, earlier authors expressed their opposition to the practice of charging interest. The persistently low interest rates in Nigeria might fail to motivate developing countries, as they grapple with financial exclusion in the face of interest-based competitors. This situation highlights the pressing need for innovative financial solutions that empower all market participants. The above-mentioned research investigated if interest rates

boosted savings in Nigeria from 1987 to 2021, using vector autoregressive/error correction methods to examine the data and draw statistical conclusions. The findings indicate that the deposit rate in Nigeria had no significant impact on savings in that country. The latter are, on the other hand, significantly affected by the treasury bill rates, among other variables.

Loaba (2022) analysed the impact of the use of mobile banking services on saving behaviour in West Africa. Using the Global Findex Database 2017 and jointly estimating a multinomial logit and probit models, the author found that the use of mobile banking services increased the likelihood of formal and informal saving by 2.4% and 0.83%, respectively. Women were more likely to engage in informal savings, but the likelihood of them starting formal savings increased when they used mobile banking services.

Obi (2022) examined how interest rates influenced savings and investment in Nigeria from 1981 to 2020. The research utilised modern econometric methods like cointegration and error correction mechanisms to identify the permanent link between the selected variables. Using the monetary policy rate to represent interest, he found that the interest rate greatly influenced savings and investment in Nigeria. However, the monetary policy rate he used was not ideally matched to the purpose of the research (a deposit interest rate would be more suitable here).

The study by Umoru and Tedunjaiye (2023) investigated the impact of interest rate volatility and exchange rate devaluation on aggregate savings within the Economic Community of West African States (ECOWAS) region. Using a panel-group-means (PMG) estimator and GARCH/ARCH (1,1) models, the authors showed that interest rate volatility had a significant impact on savings in some countries of the region, while in some other it did not. Their aggregate results demonstrated that, in the short run, interest rate movement does not have a significant impact on savings, unlike in the long run.

The study by Muse (2024) explored the impact of different interest rate regimes on savings in Nigeria. Using co-integration regression and a VAR-based impulse-response model, it analysed pre- and post-regime changes. The author found that the prime lending rate had a marginally negative effect on savings, and the policy of the liberalisation of interest rates did not significantly impact savings. However, the type of interest rate regime did moderate the relationship between interest rates and the savings volume in Nigeria.

Idi and Jabil (2024) studied the effects of interest rates on savings and investment in Nigeria from 1980 to 2023. Using econometric techniques such as cointegration and error correction, they found that interest rates significantly impacted both savings and investment in Nigeria. They used the monetary policy rate in their research (which does not directly affect savings)

instead of the deposit interest rate. This study used a single interest rate to examine its influence on savings and investment, which might not be the most relevant choice of measurement.

Fundji (2024) studied the influence of interest rates on savings growth in the whole of Africa (apart from North Africa) between 2009 and 2021, using fully modified ordinary least squares. The results confirmed a statistically significant impact of interest rates on savings growth across all countries. Fundji's (2024) method proved effective since the variables were stationary of the same order; however, the deposit interest rate that is most relevant to savings could have been employed for a more adequate representation. Besides, the claim that interest rates benefit savings growth across all income levels is too general and should consider the distinct economic contexts of high-income versus low-income countries.

2.4. Research Gap

The relationship between interest rates and savings behaviour is complex, yet there is a notable research gap in this area in relation to West Africa. Most studies focus on individual countries or developed economies, neglecting the unique factors in the region. Furthermore, examining how financial literacy and varying employment rates affect savings behaviour in response to changes in interest rates (deposit interest rate) could help fill another important gap in the existing body of research. The work of Umoru and Tedunjaiye (2023) that investigated the impact of interest rate volatility and exchange rate devaluation on aggregate savings within the ECOWAS region could have been exhaustive, but the authors used real interest rates to work out the interest rate volatility instead of the deposit interest rate. In contrast, our study uses the latter, which is the most suitable type of interest rate for this kind of research.

3. Methodology

3.1. Theoretical Framework

The life-cycle hypothesis (LCH) is a key framework developed by Franco Modigliani and Richard Brumberg in the 1950s that explains how interest rates influence savings behaviour. It asserts that individuals plan their consumption and savings over their lifetime, saving during their working years for retirement. A crucial aspect of the LCH is intertemporal choice, where higher interest rates incentivise saving by increasing the opportunity cost of current

consumption, while lower rates encourage immediate spending. The LCH also highlights the impact of the expectations about future income and interest rates on savings-related decisions. In West Africa, the LCH offers insights into how interest rate fluctuations affect saving behaviour, which is vital for policymakers seeking to create effective financial tools that foster savings and enhance economic stability. Overall, it serves as a valuable framework for analysing savings behaviour and informing policies that promote regional economic resilience. The hypothesis of the study is as follows:

H₀: Interest rate does not significantly impact savings in West Africa

3.2. Model Specification

This section introduces the designated model addressing the impact of interest rates on savings in West Africa. The volume of savings is adopted as the dependent variable and the deposit interest rate assumes the role of the focus variable, while the *per capita* income and inflation rate are the control variables. In this research, the ordinary least squares (OLS) technique of multiple regression analysis will be employed to estimate the model. The model proposed by Babalola and Abdul (2022) was adapted to the needs of this study. Below is the outline of Babalola and Abdul's study:

$$GDS = f(DR, TBR, INS, INF, CBB). \quad (1)$$

The model is thus modified below as:

$$SAV = f(DR, PCI, INF). \quad (2)$$

Expressing equation (2) econometrically, we have:

$$SAV_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 LPCI_{it} + \beta_3 INF_{it} + \mu_{it}, \quad (3)$$

where:

SAV_{it} is the savings rate for country i at time t (proxied by total savings as a % of GDP),
LPCI_{it} is the natural log of *per capita* income for country i at time t. The natural log is taken to equalise the variable,

DR_{it} is the deposit rate for country i at time t,

INF_{it} is the inflation rate for country i at time t ,

μ_{it} is the stochastic error term, which assumes a constant variance and normal distribution.

Where β_0 (is constant), $\beta_1 - \beta_4$ are the parameters of variables for estimation. The subscript i ($i = 1 \dots N$) represents the nation i in our sample, N is equal to 8, while t ($t = 1 \dots T$) specifies the period (year). The study examines eight nations throughout 39 years, so there are more years (T) than nations (N). The study population is therefore $T \times N = 312$ observations.

***a priori* Expectations and Measurement of Variables**

SAV (Savings)

The savings rate is measured as the total volume of savings expressed as a percentage of GDP. This captures the overall saving behaviour of an economy relative to its size.

DR (Deposit Rate)

Measurement: The deposit rate is measured as the interest rate offered by banks on deposits, reflecting the returns customers receive for their savings.

***a priori* expectation:** A higher deposit rate is expected to positively influence the savings rate (SAV_{it}), as it incentivises individuals to save more due to better returns ($\beta_1 > 0$).

PCI (Per Capita Income)

Measurement: The *per capita* income is the average income per individual in an economy. Here it is measured as the GDP divided by the population of the country. It is expressed in constant 2015 USD. This facilitates a fair comparison between countries.

***a priori* expectation:** The PCI is expected to positively affect the savings rate (SAV_{it}), as higher income would encourage saving ($\beta_2 < 0$).

INF (Inflation rate)

Measurement: The inflation rate is measured as a percentage change in the consumer price index.

***a priori* expectation:** The inflation rate is expected to negatively affect the savings rate (SAV_{it}), as higher inflation rates may discourage saving in favour of consumption and investment/ buying capital goods ($\beta_3 < 0$).

3.3. Sources of Data

We used secondary data from time series with yearly frequency sourced from the World Bank Development Indicators (WDI) 2023. Our aim was to examine the impact of interest rates on the saving behaviour in West Africa by analysing eight countries, four Anglophone and four

Francophone ones, presented in Table 1. Covering the period from 1986 to 2023, the study consists of 312 observations, capturing significant economic events and trends in the region.

Table 1. The selected West African countries

S/N	Anglophones	S/N	Francophones
1	The Gambia	1	Guinea
2	Ghana	2	Cote D'Ivoire
3	Nigeria	3	Mali
4	Sierra Leone	4	Niger

Source: authors' work.

3.4. Estimation Technique

We employed a dynamic panel data analysis (Panel Auto-Regressive Dynamic Lag) after we carried out the usual pre-estimation tests such as descriptive statistics, correlation matrix and stationarity, using Eviews 9 of IHS Global (2016).

Equation (4) below represents a general panel ARDL(p, q_1, q_2, q_3) specification for the functional model outlined in Equation (1). Equation (5) presents the error-correction model (ECM) reparameterisation, which is useful for analysing short-run versus long-run effects.

According to Bismans and Damette (2025), Pesaran and Shin (2003) and Arellano (2003), the econometric model specification for the technique has the form presented below.

General Panel ARDL(p, q_1, q_2, q_3) is specified as

$$SAV_{it} = \alpha_i + \sum_{k=1}^p \phi_{i,k} SAV_{i,t-k} + \sum_{k=0}^{q_1} \beta_{i,k} DR_{i,t-k} + \sum_{k=0}^{q_2} \gamma_{i,k} LPCI_{t-k} + \sum_{k=0}^{q_3} \delta_{i,k} INF_{i,t-k} + \mu_{it}, \quad (4)$$

where α_i are individual (country) fixed effects or can include time effects.

Lags p, q_1, q_2 , and q_3 can differ by variable, or be set equal for simplicity.

ECM (Error-Correction Model) form — panel ARDL reparameterisation

A convenient reparameterisation isolates short-run dynamics and the long-run equilibrium. For compactness, write an ARDL(k, k, k, k) ECM; the general case is analogous.

$$\Delta SAV_{it} = \mu_i + \lambda_i (SAV_{i,t-k} - \phi_{1,i}, iDR_{i,t-k} - \phi_{2,i}, LPCI_{i,t-k} - \phi_{3,i}, INF_{i,t-k}) + \sum_{j=0}^{s1} \pi_{1,i,j} \Delta DR_{i,t-j} + \sum_{j=0}^{s2} \pi_{2,i,k} \Delta LPCI_{i,t-j} + \sum_{j=0}^{s3} \pi_{3,i,j} \Delta INF_{i,t-j} + uit, \quad (5)$$

where λ_i is the speed-of-adjustment coefficient (expected < 0 if disequilibria correct toward long run).

The long-run coefficients are $\phi_{1,i}, \phi_{2,i}, \phi_{3,i}$.

Short-run dynamics are captured by the π -coefficients on first differences.

4. Research Results

4.1 Descriptive Statistics

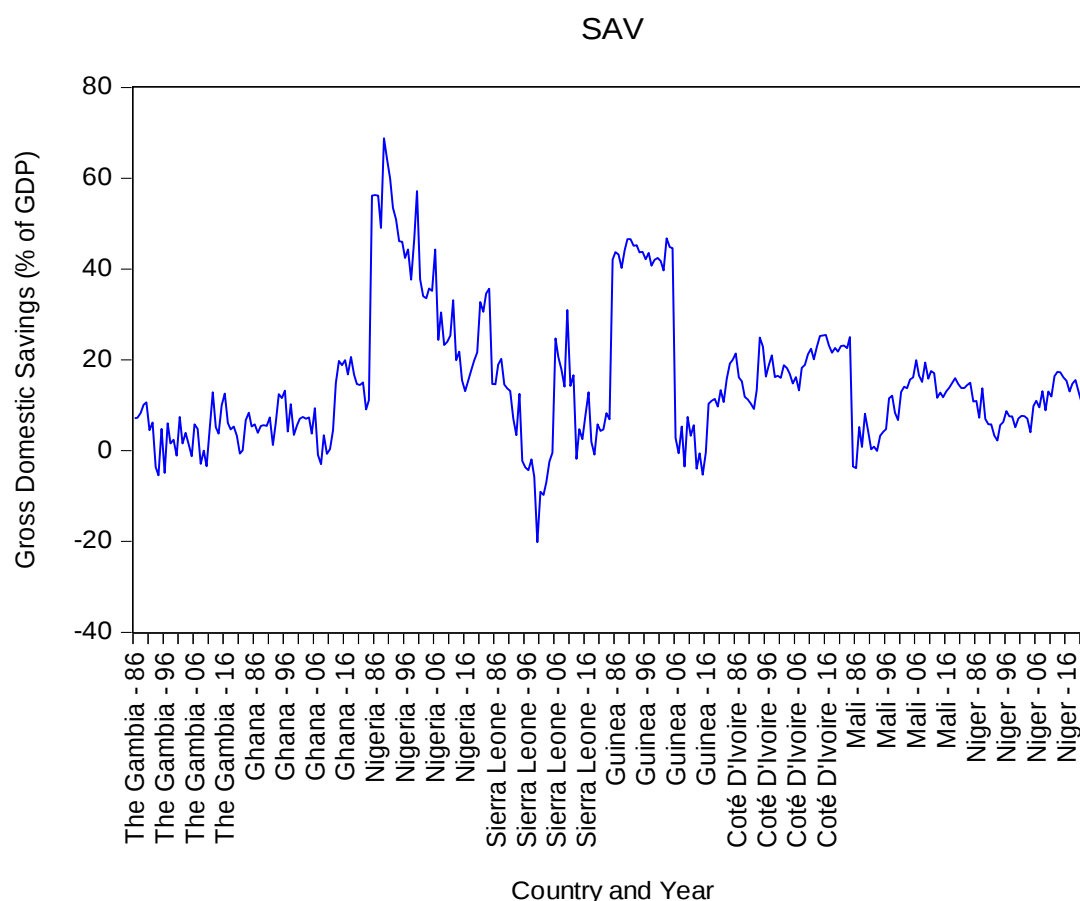
The provided summary statistics for the variables SAV (savings), DPR (deposit rate), PCI (*per capita* income) and INF (inflation rate) offer valuable insights into West Africa's financial landscape.

Result of Descriptive Statistics

Figures 1–4 present an overview of the eight studied countries in relation to various variables, including savings and deposit interest rates, income *per capita* and inflation rates, using line graphs.

In Figure 1, the behaviour of gross domestic savings measured as a percentage of GDP shows a marginal percentage of less than 20% throughout the studied period in the countries under consideration. Even though Nigeria, Sierra Leone and Guinea could boast savings at more than 20% of GDP (Nigeria having the highest savings up to 64%, followed by Guinea with up to 43% and Sierra Leone with up to 30% of GDP), the whole region, represented by eight countries, had a mean percentage of savings smaller than 20% of GDP, which indicates a low savings culture. Figure 1 also shows periods of dissaving in Gambia, Ghana, Sierra Leone and Guinea, when the percentage of savings was smaller than zero.

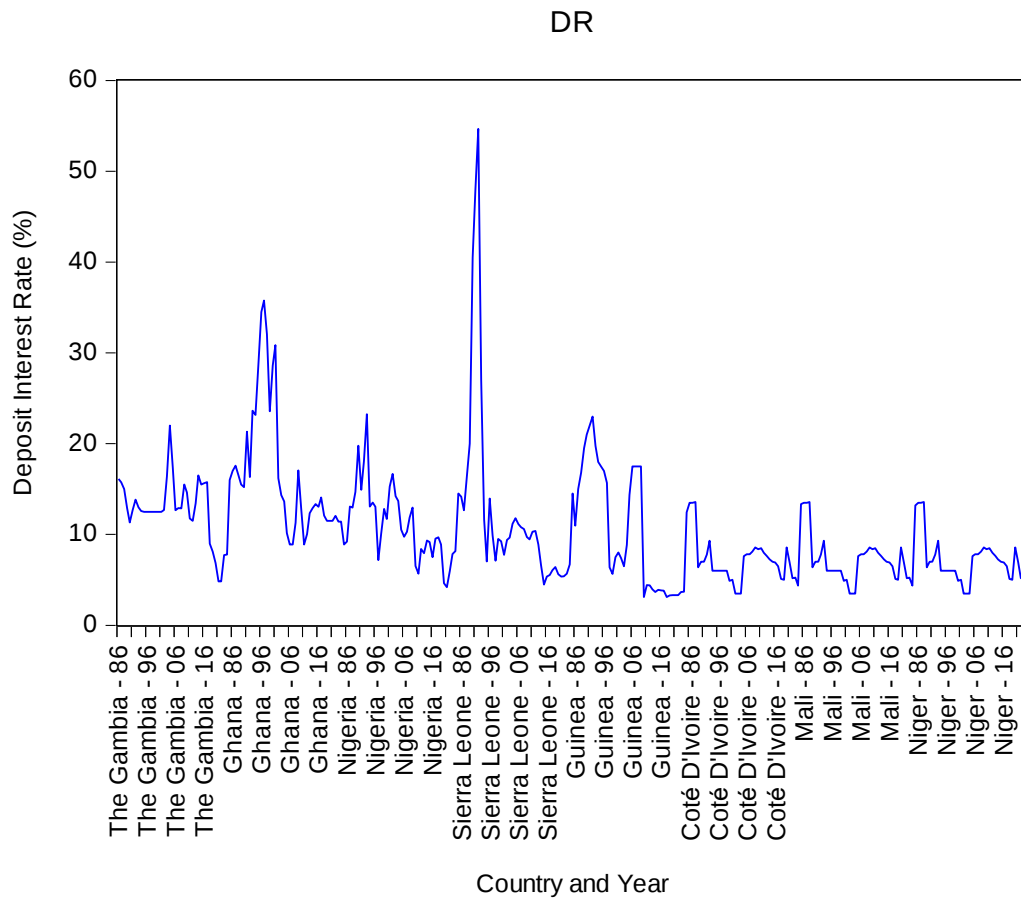
Figure 1. Savings in West Africa



Source: authors' work.

Figure 2 shows the deposit interest rate (DR) of the sampled countries in the region in a similar way. According to the figure, Guinea had the lowest DR (3.1%), Sierra Leone the highest (over 50%), and Ghana the second-highest (over 35%). The average deposit interest rate in the region hovered around 10%, which is relatively high compared to some developed countries. It can be observed that Sierra Leone, which had the highest deposit interest rate, failed to stimulate savings (the country had the lowest savings rate).

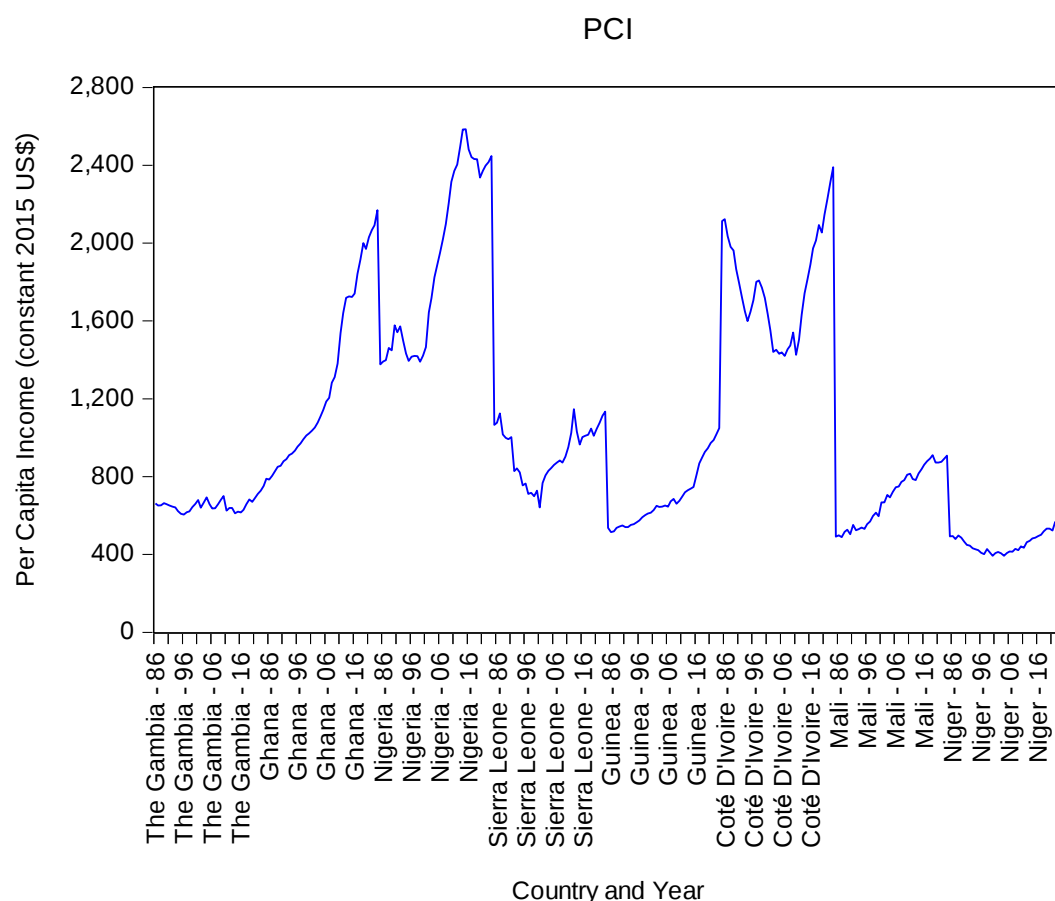
Figure 2. Deposit interest rate in West Africa



Source: authors' work.

Figure 3 presents the income of the studied countries assessed by means of the *per capita* income.

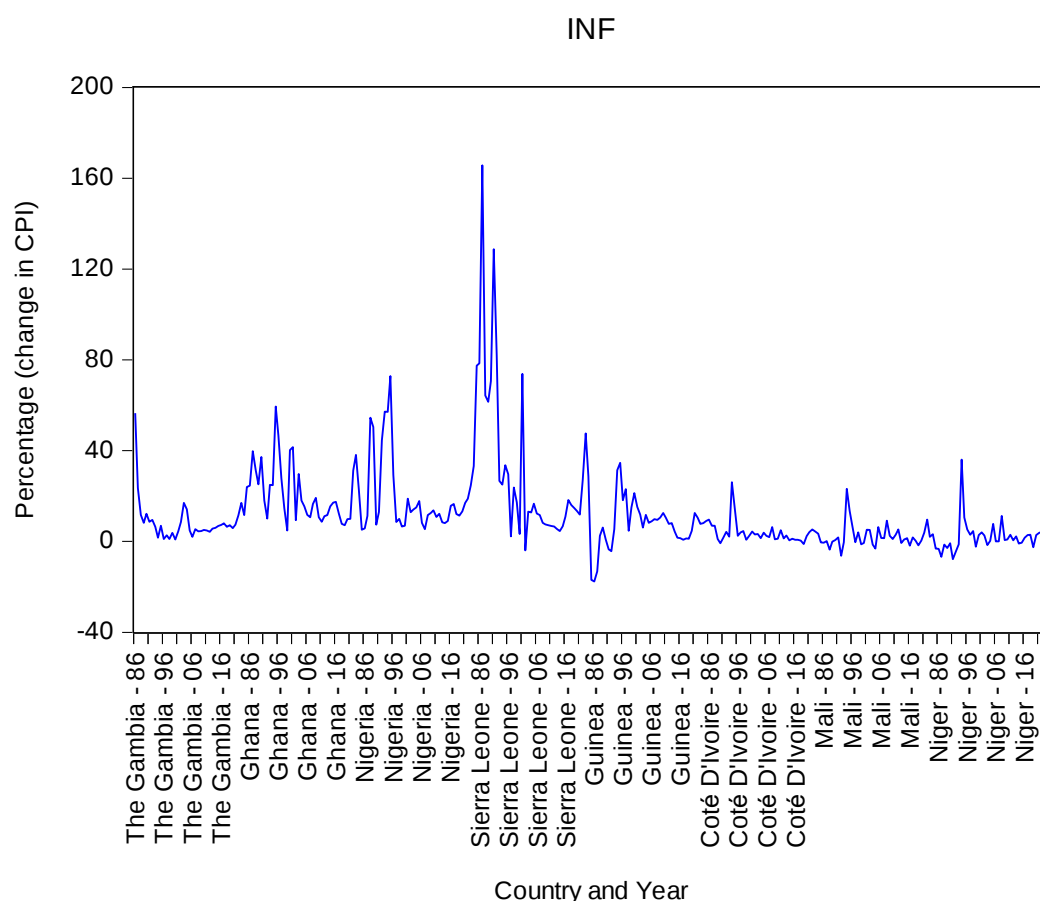
Figure 3. *Per capita* income in West Africa



Source: authors' work.

Figure 3 shows that Niger had the lowest annual income *per capita* of about 393 USD, followed by Mali (489 USD) and the Gambia (605 USD). The Gambia had a more stable PCI variation within the period – in other words, the country had a very low deviation of the PCI over the years. Other countries have a high rate of PCI deviation, with Nigeria taking the lead in this respect and being followed by Niger and Ghana.

Figure 4. Inflation in West Africa



Source: authors' work.

The inflation (INF) in the region over the studied period is presented in Figure 4. The average inflation totalled around 11% with Guinea experiencing negative inflation (-6.2%), which indicates a deflationary period. The highest inflation (over 160%) was observed in Sierra Leone. Ghana and Nigeria also saw challenging inflation rates. On the other hand, the Gambia, Guinea, Cote D'Ivoire, Mali and Niger had relatively low inflation rates.

4.2. Correlation Matrix

We used a correlation matrix to show the nature and degree of correlation between the dependent and independent variables of the model. Here, although it expressed the relationship between the dependent and independent variables, more emphasis is placed on the relationship within the independent variables to detect the presence of multicollinearity in the specified model.

Table 2. Results of correlation matrix

Variable	SAV	DR	PCI	INF
SAV	1			

DR	0.0693	1		
PCI	0.3279	-0.0645	1	
INF	0.0977	0.5058	0.1090	1

Source: authors' computation (World Bank Group, n.d.).

Table 2 shows the results of the correlation matrix. The DR, PCI and INF have a positive association of 0.069, 0.328 and 0.098 with the dependent variable, SAV (savings). More importantly, the correlation coefficients (-0.065, 0.0506 and 0.109) within the independent variables are not up to the threshold of 0.8, which indicates that the explanatory variables are not highly correlated and hence free from the problem of multicollinearity.

4.3. Unit Root Test

For the stationarity test, two test statistics were adopted to test for the presence of unit root, and the results are presented in Table 3.

Table 3. Results of the panel stationarity test

Variable	Levin, Lin & Chu t*				Im, Pesaran and Shin W-stat				Remark
	Level		1 st Diff		Level		1 st Diff		
	Stat	Prob	Stat	Prob	Stat	Prob	Stat	Prob	
SAV	-0.0546	0.4782	-9.7846	0.000	-0.4818	0.3150	-10.7456	0.000	I(1)
DR	2.8912	0.0019	-	-	-3.6081	0.0002	-	-	I(0)
LPCI	3.4238	0.9997	-6.6136	0.000	4.9433	1.0000	-5.9061	0.000	I(1)
INF	5.9760	0.000	-	-	-7.5281	0.000	-	-	I(0)

Source: authors' computation, (World Bank Group, n.d.).

The results in Table 3 indicate that DR and INF are stationary at level (I(0)), while SAV and PCI are stationary at the first difference (I(1)). This means the variables are integrated into both order zero and order one. As a result, this study used a technique that can differentiate lag selection for optimal model selection, specifically the panel autoregressive distributed lag (PARDL) model. This model applies to both short-run and long-run analyses, depending on the results of the cointegration test, which assesses the long-run relationship between the variables.

4.4. Panel Cointegration Test

To check for the presence of the long-run impact, the panel cointegration test is employed using both within-dimension (eight test statistics) and between-dimension (three test statistics), and these results are presented in Table 4, with deterministic intercept and trend and an automatic lag length selection based on the Schwartz information criteria with a maximum lag of eight.

Table 4. Results of panel cointegration test

Alternative hypothesis: common AR coefs. (within-dimension)					Alternative hypothesis: individual AR coefs. (between-dimension)		
Test	Statistic	Prob.	Weighted Statistic	Prob.	Test	Statistic	Prob.
Panel v-Stat	0.015	0.4939	0.0271	0.4892	Group rho-Stat	-0.4001	0.3445
Panel rho-Stat	-0.440	0.3299	-1.3304	0.0917	Group PP-Stat	-2.6117**	0.0045
Panel PP-Stat	-1.991**	0.023	-3.0834**	0.0010	Group ADF-Stat	-2.7112**	0.0034
		2					
Panel ADF-Stat	-2.2465*	0.012	-3.0504**	0.001			
		3		1			

Note. ** and * indicate significance at 1% and 5% levels, respectively. V-stat is rescaled variance statistics, rho-stat is Rho statistics, PP-stat is Phillips-Perron statistics, ADF-stat is Augmented Dickey-Fuller stat. They are all test statistics for stationarity.

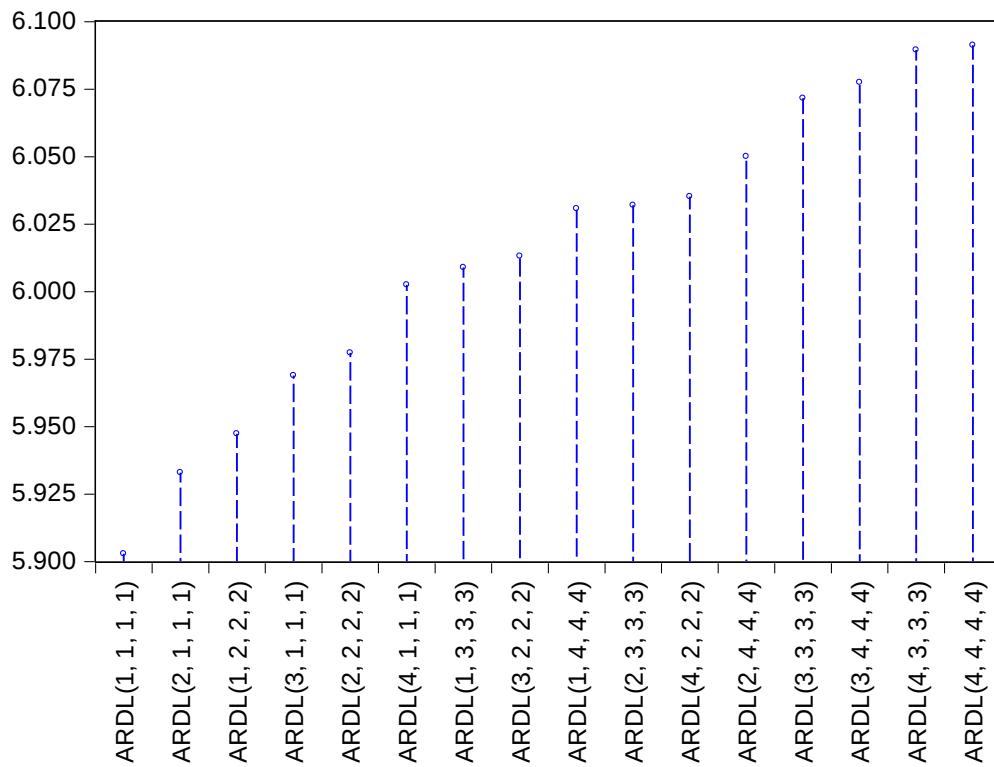
Source: authors' computation (World Bank Group, n.d.).

Table 4 showcases the overall eleven test statistics to ascertain the presence of cointegration in the long run. Of all the eleven test statistics, six identify cointegration in the model at the 1%- and 5%-level of significance, while five express otherwise (no long-run cointegration). Therefore, it is concluded that there is a long-run relationship in the model, which is in line with the findings of Obeh and Brotoboth (2021), Umoru and Tedunjaiye (2023), Fundji (2024) and Idi and Jabil (2024). Further analysis of the model is presented in Tables 5 and 6, which present the error correction, long-run and short-run analysis for the clarity of the impact analysis.

To continue the analysis, we need to select the best lag order for the model. The study used the Akaike information criteria (AIC), and the result is presented in Figure 5.

Figure 5. Model selection order using AIC

Akaike Information Criteria



Source: authors' work (World Bank Group, n.d.).

From the figure, the PARDL (1,1,1,1) has been chosen as the best lag among sixteen models showcased, because it has the lowest AIC coefficient (5.900). Therefore, these lags were used for the long-run and short-run impact analysis, as presented in Tables 5 and 6.

Table 5. Results of panel ARDL analysis (long-run analysis)

Selected model: ARDL (1, 1, 1, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DR	-0.0345	0.1674	-0.2061	0.8368
LPCI	15.9722**	3.6271	4.4035	0.0000
INF	0.1617*	0.0821	1.9696	0.0499

Note. ** and * indicate significance at 1% and 5% levels, respectively. This is the result of Equation 5. Source: authors' computation (World Bank Group, n.d.).

In the long run, as evident in Table 5, on average the deposit rate (DR) does not have any significant impact on the savings (SAV) in the region, as demonstrated by its probability of 83.68%. This implies that the interest rate on savings in the region could not stimulate customers to deposit their funds as savings, which is in line with the study of Babalola and Abdul (2022), but different from the findings of Umoru and Tedunjaiye (2023), Fundji (2024) and Idi and Jabil (2024). This discrepancy is caused by the measurement of the interest rate. The *per capita* income (PCI), which is the main cause of saving, has a significant and direct effect on savings in the region, as indicated by the probability of 0.000%. This conforms with most theories that explain the impact of income on savings, such as the classical, Keynesian

and the monetarist theories. This result confirms that, in the long run, income has a significant and direct impact on savings. Let us check, then, what happens in the short run.

Table 6 presents the results of the error correction and the short-run impact analysis, after the automatic lag selection of PARDL (1,1,1,1).

The deposit interest rate (DIR) is negative and has an insignificant effect on SAV in the region in the short run at one lag period, as indicated by the probability (29.19%). By implication, in the short run, the interest rate (deposit rate) does not significantly stimulate savings.

Table 6. Results of panel ARDL analysis (short-run analysis)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ECM(-1)	-0.3094	0.0733	-4.2239	0.0000
D(DR)	-0.0975	0.0923	-1.0561	0.2919
D(LPCI)	20.1150	21.6894	0.9274	0.3545
D(INF)	0.0466	0.0561	0.8301	0.4072
C	-30.7928	7.2081	-4.2720	0.0000

Note. This is the result of Equation 5.

Source: authors' computation (World Bank Group, n.d.).

The two control variables (PCI and INF) are positive sign but also insignificant in the short run, as indicated by their p-values (35.45% and 40.72%). This implies that on average, in the short run, an increase in the *per capita* income does not affect savings immediately. Inflation plays a significant role in shaping saving behaviour, as fluctuations in the rate of price level do not immediately influence savings in the short term. Initially, when prices rise, individuals may not immediately adjust their savings habits. This delay can be attributed to various factors, such as a lack of awareness about how inflation erodes purchasing power or a tendency to prioritise current consumption over future savings. As a result, the impact of inflation on savings tends to manifest over a longer period, ultimately affecting individuals' financial decisions and their ability to maintain or grow their savings in real terms.

The ECM coefficient has the correct negative sign (-0.3094), and it is significant with a probability of 0.00%, meaning that yearly, a 30.9% disequilibrium in the model is corrected. Although the speed is low, it is quite significant in making the necessary corrections.

5. Conclusions

The study explores low saving levels in West Africa and the impact of interest rates on the saving behaviour using the life-cycle hypothesis (LCH). We found that while interest rates did not significantly affect savings, the *per capita* income did. The relationship between interest

rates and savings is complex, influenced by factors beyond the economic theory. This research contributes to the existing literature by testing these theories in the West African context, using the deposit interest rate to measure its effect on savings. An econometric model was developed to analyse the practical application of these theories.

The study recommends that, since the deposit interest rates do not have a significant effect on savings, policies focused on other incentives rather than interest rates should be developed to promote long-term investment strategies in order to balance immediate investments with savings and encourage firms to set aside funds for future use.

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