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Effect Of Shadow Banking Activities On The Nigerian Economy

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ABSTRACT:
The study assessed the effect of shadow banking on the Nigerian economy over a thirty-two-year study period from 1981 to 2022. The study hypothesized that shadow banking activities significantly affect the economy. Data was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin spanning the study period. Multiple regression methodology was used as an estimation technique. Based on the long-run results, the study provided strong evidence that the Nigerian economy substantially relies on shadow banking services. This supports the argument that shadow banking reduces dependency on traditional banks as a source of credit, benefiting the economy by providing an additional lending source and diversification in the financial system. A major policy implication of the outcome of the study is that monetary authorities should encourage shadow banking as it provides an alternative source of financial intermediation in the country. Finally, knowing the potential buildup of systematic risk inherent in shadow banking services, effective regulation should be used to ensure its effective and efficient use in the economy to foster growth and development.

KEYWORDS: *Shadow, Traditional, Diversifications, Monetary authorities and financial intermediation*

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INTRODUCTION

The Financial Stability Board (FSB, 2015) defined shadow banking as credit intermediation beyond the conventional banking sector. However, as noted by Li (2014), this fundamental description does not capture the diversity in the forms of activities classified as shadow banking across different nations. In the traditional banking system, loan intermediation is conducted by institutions like commercial banks, which benefit from deposit insurance and the central bank's support facility. In contrast, shadow banking activities lack these safeguards, as highlighted by Adrian and Ashcraft (2016).

The worldwide financial crisis (WFC) and the recession of 2007-2009 have justified increased scrutiny of the shadow banking system's viability. When financial organizations commit to transferring risk and providing maturity and liquidity transformation outside the conventional banking system, the shadow banking system emerges (Adrian & Ashcraft, 2019). Tang and Wang (2020) present two arguments for banks' participation in shadow banking operations. First, it provides regulatory arbitrage, enabling financial institutions more opportunities to raise their profitability without being constrained by regulatory constraints. This claim is bolstered by the fact that most countries, including Nigeria (SARB, 2016), do not have prudential oversight of most shadow banking activity.

Second, shadow banking increases the complexity and opacity of financial instruments and procedures, allowing shadow banks to earn more profit than ordinary banks while raising investor risk. Shadow banking negatively influences regulators because it reduces the efficiency of regulation, which could destabilize financial markets. Furthermore, the opaque structure of shadow banking can be counterproductive to investor protection, raising risk and lowering investor trust in financial markets. As a result, this type of financial innovation poses challenges to regulators and investors, and it has the potential to disrupt markets, as it did during the GFC. On the contrary, Ackermann (2020) contends that effectively managed shadow banking can enhance market efficiency, diversification, better risk management, and increased liquidity.

The existing literature on the function of non-bank financial intermediaries (NBFI) in economic development has proved its significance (Rateiwa & Aziakpono, 2017) in how shadow banking impacts the economy. However, these analyses make no distinction between NBFIs engaged in dangerous shadow banking activities and other non-depository financial firms that do not engage in shadow banking, such as insurance companies and pension funds. According to McCulley (2009) and Meeks (2017), shadow banks engage in high-risk, high-leverage operations that endanger the financial system. Furthermore, shadow banking performs bank-like services without the government's backing or deposit insurance.

Thus, shadow banks pose a greater threat to systemic stability than banks or other NBFIs do. A substantial body of scholarship examining the involvement of shadow banks in the GFC lends weight to this claim (Pozsar, 2013; Shin, 2009; Singh & Pozsar, 2011; Stein, 2010). However, few studies look at the financial advantages of shadow banking, and there is little empirical study on how shadow banking affects the macroeconomic situation in developing nations (Bengtsson, 2016; Tang & Wang, 2015). Given that it has been demonstrated that shadow banking operations have increased significantly over the past 20 years, this is a significant study gap. In 2012, shadow banking reportedly accounted for 117% of the world's GDP (Li, 2014). Thus, shadow banks pose a greater threat to systemic stability than banks or other NBFIs do. A substantial body of scholarship examining the involvement of shadow banks in the GFC lends weight to this claim (Pozsar, 2013; Shin, 2009; Singh & Pozsar, 2011; Stein, 2010). However, few studies look at the financial advantages of shadow banking, and there is little empirical study on how shadow banking affects the macroeconomic situation in developing nations (Bengtsson, 2016; Tang & Wang, 2015). Given that it has been demonstrated that shadow banking operations have increased significantly over the past 20 years, this is a significant study gap. In 2012, shadow banking reportedly accounted for 117% of the world's GDP (Li, 2014).

Additionally, the US, the nation with the greatest shadow banking industry, has outgrown its pre-crisis levels. The Eurozone experiences a similar situation. Even if it has slowed recently, shadow banking in South Africa alone increased from 20% of GDP in 2002 to 50% in 2008. Shadow banking activities have increased in other emerging markets. According to Moody, China's shadow banking peaked in December 2016 at 87% of GDP before declining to 70% at the end of 2019 due to a deleveraging policy (Moody, 2018). In cases where the evolution of legislation cannot account for some of these activities, the rise in shadow banking activities poses a bigger threat to financial stability. To give policymakers a thorough knowledge of the role and impacts of shadow banking on the economy, there is not enough documented evidence regarding the expansion of shadow banking in developing market economies. In addition to the dearth of formal investigations, Ackermann et al. (2012) stress that measures to lessen the detrimental consequences of shadow banking should be made without impeding these operations' ability to generate income. Contrary to these views, Khan (2015) argues that the bulk of studies emphasizing the role of shadow banking in worsening financial stability tend to ignore the innumerable benefits that can accrue from a well-functioning shadow banking system (Khan, 2015).
Regulators must consider the diversity of the institutions engaged in shadow banking activities and the heterogeneity of financial systems to reduce the negative effects of these activities while preserving their

beneficial impact on credit extension (Rick, 2010). This study examines the impact of shadow banking on the Nigerian economy between 1981 and 2022 in opposition to the aforementioned theoretical claims.

REVIEW OF LITERATURE

Shadow Banking Metrics

The FSB's shadow banking regulations, the European Union (EU), the Organization for Economic Cooperation and Development (OECD), the International Monetary Fund, and certain individual authors provided an outline of shadow banking measures as documented below.

Approach of the Financial Stability Board

The FSB publishes the FSB Global Shadow Banking Monitoring Report every year for the approximately 29 participating nations, including the computation of two shadow banking measures: the broad and the narrow measures. Assets from Other Financial Intermediaries (OFIs) are included in the FSB's broad gauge. OFIs are defined as "all financial intermediaries not classified as banks, central banks, public financial institutions, pension funds, insurance companies, or financial auxiliaries" by the Financial Services Board (FSB). They use a two-step process to monitor shadow banking. First, they define the "Monitoring Universe of Non-Bank Financial Intermediation" (MUNFI), also known as non-bank financial intermediaries (NBFI), by including all non-bank credit intermediation (FSB, 2016).

The second phase focuses only on particular non-bank credit intermediaries where systemic risk-posing behaviors and regulatory arbitrage can be found. The Flow of Funds statistics and central bank supervision data comprise most FSB data. As previously mentioned, the process' initial step, known as "macro mapping" by the Board, enables collecting information from all non-bank financial intermediaries.

Sub-components of NBFI that comprise the OFI sector are defined in the second stage. MMFs, REITs, real estate funds, central equivalents, hedge funds, broker-dealers, structured financial vehicles, finance businesses, financial holding companies, money lenders, and other investment funds are included in the breakdown of the OFI industry. Their significance in the overall metric varies by jurisdiction, and the degree to which they are connected to the formal banking system determines how much of an impact they have on systemic risk. For instance, a bank may possess structured finance entities, which could be listed on the bank's balance sheet. Finally, the total assets of OFIs are used to construct the broad shadow banking measure.

FSB Narrow Measure

The FSB's definition of underground banking, characterized by its strict criteria, relies on classifying economic functions into five distinct categories. Each of these economic activities can potentially jeopardize the financial system's stability. The rationale behind adopting an economic function-based approach lies in its capacity to pinpoint institutions and practices within the dynamic landscape of the financial services industry (FSB, 2013).

Each of these economic function categories encompasses entities and practices that introduce varying levels of risk to the overall financial system. For instance, a sudden cash withdrawal by investors may trigger runs on collective investment vehicles. Conversely, the securitization process can result in an excessive infusion of liquidity, alterations in maturity profiles, and heightened leverage. As outlined by the FSB (2013), shadow banking operations have the potential to stimulate asset price increases and enhance access to loans, much akin to the impact of regulated financial institutions. However, a notable downside is their susceptibility to initiating runs without the safety net afforded by public regulatory measures, rendering such situations more precarious than the failure of a regulated bank. Given the heterogeneity of financial markets, their specific risks are contingent upon the dominant activities within a particular jurisdiction (Singh & Poszar, 2013).

Shadow Banking and the Economy of Nigeria

Over the past fifteen years, Nigeria's financial services sector has evolved into one of the largest and most sophisticated within the African continent. For instance, the total assets in the banking sector have surged from approximately N2.5 trillion in 2000 to well over N30 trillion in 2016, while the insurance sector has seen its growth from around N25 billion in 2000 to approximately N800 billion in 2016. In the case of the pension industry, assets under management have swelled from less than N500 billion in 2004 to over N6 trillion in 2016 (CBN, 2019).

However, beneath the robust financial infrastructure, a substantial number of bank-like entities operate as intermediaries for businesses and individuals. The Central Bank of Nigeria identifies shadow banking activities within the financial derivatives market, which includes commercial papers, interest rate swaps, and foreign exchange forward contracts.
Despite this, the CBN and other regulators do not perceive derivatives as threatening the country's financial system, given that this market is still relatively nascent. The CBN stated in a 2014 report that "the financial derivatives markets in Nigeria are still evolving, particularly in the over-the-counter (OTC) segment. Plans are underway to introduce a derivatives exchange where more advanced instruments will be traded to attract foreign investors."

Nonetheless, despite the CBN's stance on shadow banking in Nigeria, this industry has garnered considerable attention due to the regulatory deficiencies of the apex bank and the significant portion of the population lacking access to formal financial services. Microfinance banks in Nigeria, for instance, have largely operated under the radar, primarily due to the lack of regulatory resources required for effective oversight. According to CBN data, approximately 1,000 microfinance banks are spread across the 36 states and the Federal Capital Territory. The sheer number of these banks presents a challenge for the CBN regarding monitoring and enforcing prudential guidelines.

This regulatory limitation has allowed most microfinance banks to function as suboptimal financial intermediaries compared to their commercial banking counterparts. In May 2023, the CBN revoked the licenses of over 190 microfinance banks following an audit that revealed widespread regulatory breaches, including high levels of non-performing loans and inadequate capital reserves.

Closely associated with microfinance banks are pyramid schemes, often referred to as "miracle" or "wonder" banks, which periodically emerge, promising extravagant interest rates on deposits. These Ponzi schemes operate until new deposits dwindle and eventually cease. In the past decade, notable "wonder" banks have included Nospecto Oil and Gas, Manpower, Pennywise, Wealth Builders, Treasure Fund, and others. A more recent example is the Mavrodi Mundial Moneybox (MMM) from Russia. It resulted in numerous reports of people losing their savings, school fees, investments, and more due to its collapse.

A 2014 Enhancing Financial Access survey indicated that approximately 37 million Nigerian adults, representing 40 percent of the adult population, are financially excluded. This substantial unbanked population has fostered the proliferation of informal financial intermediaries such as rotating savings credit associations (ROSCAs), religious organizations, cooperative societies, and community welfare schemes. These unregulated institutions offer banking-like services, including savings, loans, insurance, and mortgages, catering to various groups such as farmers, market women, civil servants, students, artisans, traders, and more. The activities of these informal financial institutions contribute significantly to Nigeria's informal economy, accounting for up to 35 percent of the total GDP, approximately N40 trillion.

Fintech companies may eventually join the ranks of large investment funds and other more complex financial vehicles, thus contributing to shadow banking. The European Central Bank (ECB) and the Financial Stability Board (FSB) highlight in their reports that the rapid growth of Fintech companies could impact this field. These technology-based companies offer financial services without falling entirely under banking regulations, potentially raising systemic risks, as Hodula*et al.* (2020) pointed out. It is important to note that shadow banking is a legally recognized investment and financial services instrument, and neither of these organizations prohibits its existence. Their concerns center on the need for financial sector supervision to consider these vehicles and prevent excessive risks to the system.

Theoretical Review
Shadow banking is situated within the broader framework of financial innovation and related theories, as outlined below.

The Financial Instability Hypothesis: Hyman Minsky
The origins of contemporary financial stability theory can be traced back to Minsky's work in 1977, which focused on the theory of financial instability. Minsky, in 1977, challenged the neoclassical interpretation of Keynes' general theory, offering an alternative interpretation that emphasizes financial turmoil as a primary driver of the General Theory. According to Minsky in 1977, there has been a misinterpretation of the General Theory, which erroneously suggests that investment decisions drive aggregate production in a capitalist society. Instead, Keynes argued that the theory centers on the disequilibrium in financial markets. This

perspective posits that disturbances in financial markets significantly impact financial agents' ability to determine the prices of financial assets.

This theory is rooted in an economic framework comprising productive firms, households, and the government. All these economic agents have access to financial markets where various financial instruments are traded. The profitability of productive firms plays a crucial role in their ability to service debt and secure additional financing. Minsky contends that the value of assets firms hold influences their current investment decisions, while the capacity to meet future debt repayment obligations governs their access to financing. Both the valuation of assets and the ability to fulfill debt obligations hinge on the gross profits generated by businesses, which, in turn, are shaped by investment levels. Consequently, the Hyman-Minsky economic model is intrinsically linked to investment. The anticipation of higher investment levels catalyzes debt financing, as repayments can only be made when the expected investment returns are sufficiently high to cover the debt obligations.

Theories of Financial Contagion

Financial contagion refers to the phenomenon wherein distress or problems in one financial entity spread to affect other parts of the financial system. For instance, if a bank becomes insolvent or faces significant financial troubles, it may fail to meet its obligations to creditors, leading to a chain reaction of distress affecting those creditors and investors. Ozkan and Unsal (2012) highlight that when a bank experiences difficulties, creditors and investors react by selling off their financial claims. This, combined with herding behavior among depositors or investors, can trigger a bank run. Due to the interconnections within financial markets, the failure of one bank can easily spill over to affect other institutions holding financial claims in the distressed bank. This process can propagate throughout the banking network, culminating in a full-blown financial crisis.

Dungey and Gajurel (2015) argue that the transmission of bank failures from other regions or jurisdictions can be particularly detrimental to the stability of domestic financial systems. While financial contagion can be gradual and subtle during normal economic conditions, it tends to be more aggressive and self-reinforcing during a crisis. The primary factors contributing to contagion in financial markets include disparities in information, imperfections within markets, and the role played by currency dynamics (Allen & Gale, 2000).

Shadow Bank Channel of Monetary Policy

Several studies, including those by Verona (2013) and Wang and Zhao (2016), have identified the shadow banking channel of monetary policy. However, it was Xiao (2018) who first brought attention to the existence of this channel. This channel helps us understand why shadow banking tends to increase during periods of monetary contraction.

When central banks raise interest rates, it reduces the liquidity available for traditional banks to conduct their operations. Instead of cutting back on their lending, banks often turn to alternative sources of financing that replace central bank money. One such source is the wholesale market, where banks interact with non-bank financial intermediaries. In times of financial shortfall, banks can borrow from the wholesale market. They can lend to non-bank financial intermediaries in this market when they have excess funds. This creates a trade-off where the liquidity of formal banks decreases while the shadow banking sector expands.

There are several reasons for this relationship outlined in the literature. First, a decrease in interest rates can push commercial banks into shadow banking activities in pursuit of higher yields. Research by Tang and Wang (2015) shows that returns in the shadow banking sector are typically higher than in the formal banking sector. This profit motive can drive traditional banks to engage in shadow banking for better returns. Second, regulatory arbitrage allows banks to use shadow banking as a substitute for regulated liabilities. Financial market participants may shift towards the shadow banking sector when there are stricter capital regulations, where regulations are either lighter or absent altogether. Consequently, tight monetary policies can increase activity in the shadow banking sector, as shown by Wang and Zhao (2016) and Xiao (2020).

In summary, while there is an insurmountable amount of research on monetary policy transmission, no single transmission mechanism can completely explain the transmission of monetary policy. Policymakers are, therefore, expected to understand the context in which they craft policies and the possible impact of monetary and financial variables on monetary policy transmission. This study extends the literature on monetary policy transmission by investigating the linkages between shadow banking, monetary policy, liquidity, and risk-taking.

These theories and conceptual foundations dovetail and justify using the constructs and variables specified below.

In this study, the dependent variable is Nigeria's Economic Growth Rate, represented by the growth in Gross Domestic Product (GDPGR).

The independent variable is the provision of shadow banking services (SBS). Shadow banking is primarily constructed using data from the Central Bank of Nigeria (CBN) regarding the assets of other financial intermediaries following the work of Barbu (2016) and Altunbas (2009). Inflation serves as an explanatory variable. The Consumer Price Index (CPI) data used in this study is collected from the International Monetary Fund (IMF) and has been log-transformed to facilitate the analysis of the inflation rate.

It is important to note that achieving price stability is the primary goal of monetary policy in most jurisdictions, as Nelson (2008) highlighted. Typically, a positive shock in the policy rate is expected to reduce the inflation rate, resulting in a decrease in the money supply. The Central Bank Policy is the main monetary policy instrument in the model. Thus, it provides information about the monetary policy stance of the central bank. In standard economic theory, a positive shock in the policy rate is expected to reduce the money supply, thereby decreasing bank liquidity and output. The data for the policy rate is collected from the CBN database.

Bank liquidity is measured using M1 and M2. It measures liquidity provision by banks, which the central bank backs. The analysis of bank liquidity has changed in the recent past as most studies have attempted to account for market-based and credit-based sources of liquidity in addition to deposits and central bank money. In this study, we consider bank liquidity at the basic level, which includes bank deposits only to allow for interaction between bank liquidity and shadow banking, providing some market-based liquidity.

Review of Empirical Literature

In a study by Kim conducted in 2021, secondary data for G-20 countries was utilized to examine the factors driving the growth of shadow banking. The analysis covered 2002 and 2013 and employed static and dynamic panel models. The findings indicated a positive relationship between the expansion of formal bank assets and the growth of shadow banks. Additionally, the study revealed that pension funds and insurance providers had a positive influence on the growth of shadow banking.

In a related study by Funke et al. (2021), an emerging economy dataset was used to investigate the impact of interest rate deregulation on monetary policy in the presence of shadow banking. They employed a DSGE (Dynamic Stochastic General Equilibrium) model with binding constraints. The impulse response functions derived from their calibrated model illustrated that commercial and shadow banks responded differently to policy changes. Specifically, when subjected to an interest rate shock, representing a contractionary monetary policy, commercial banks contracted while shadow banks expanded. These findings aligned with existing literature on financial sector regulation, which suggested that shadow banking tends to thrive when formal banking faces tighter regulation (Adrian & Ashcraft, 2019; Huang, 2015).

In a study on China, Tang and Wang (2021) examined the effects of shadow banking on returns. Drawing on theories of financial innovation, diversification, and portfolio theory, they used wealth management products offered by Chinese banks as a proxy for shadow banking activities. Their results demonstrated that shadow banking increased the risk-adjusted return of banks, as measured by the Sharpe ratio. This outcome was in line with the literature on shadow banking, which argues that shadow banks are more profitable than formal banks (Adrian & Ashcraft, 2016).

In Duca's 2021 study, the analysis focused on understanding how capital regulation and other factors influence the growth of shadow banking in both the short and long term. The study utilized vector error correction models. The findings indicated several relationships: In the long run, shadow banking was negatively associated with information costs, positively linked to the absolute burden of bank reserve requirements, and positively correlated with the relative burden of capital requirements.

Six years earlier, Harutyunyan et al. (2015) approached the measurement of shadow banking as non-traditional credit intermediation. They considered non-core liabilities of banks and non-bank financial institutions across 26 countries. Their research demonstrated that non-core liabilities were more volatile than

core liabilities, suggesting that shadow banking activities contributed to increased instability within the financial sector. The study employed univariate characteristics of the data, including measures of central tendency and correlation analysis. Additionally, they used graphical analysis to compare the relationships between GDP and non-core liabilities in the United States and the European Union.

Li's 2020 study explored the impact of China's shadow banking on the financial system's stability. The research revealed that the shadow banking system's continued growth and evolving structure posed a threat to financial stability. Wealth management products and the expansion of trust companies served as primary proxies for shadow banking in this investigation. These findings corroborated the results of a similar study by Hahm (2020), who used a credit risk model where non-core liabilities were indicative of reductions in risk premiums. Hahm's model was estimated using the Panel Probit Technique (PPT), and the results demonstrated that non-core liabilities had significant predictive power for credit crises.

In a study centered on India, Acharya et al. (2020) delved into the determinants of the growth of non-bank financial institutions (NBFIs). Their research employed a random effects model to investigate these determinants. The study's results demonstrated that NBFIs involved in credit extension experienced a significant credit expansion in 2008, confirming the impact of the financial crisis. Unlike the shadow banking systems observed in the United States and Europe, Indian banks tend to lend to NBFIs as a substitute for providing direct bank lending to rural populations. Consequently, NBFIs in India are better equipped to reach non-urban areas typically inaccessible to formal banks.

Xiao (2020) documented the presence of a shadow banking channel of monetary policy in the United States. Their study operated under two assumptions: first, that shadow banks offer suboptimal services compared to traditional banks, and second, that depositors exhibit different sensitivity to yields. Using a structural model of bank competition, the research revealed that approximately 35% of the reduction in bank deposits during periods of monetary contraction was offset by an increase in deposits within the shadow banking sector. Shadow banks entice depositors with higher interest rates, prompting them to shift from formal banks to shadow banks in pursuit of greater yields.

Haisen and Yazdifar (2020) conducted a similar study for China, employing the SVAR (Structural Vector Autoregression) model and OLS (Ordinary Least Squares) regression techniques. Their findings indicated that the expansion of shadow banking increased the money supply and the price level. They corroborated the findings of Xiao (2020), suggesting that in the presence of shadow banking, monetary policy becomes less potent, and its impact on the economy diminishes.

METHODOLOGY

The study employed an ex post facto research design, commonly used as an alternative to true experimental research for testing hypotheses related to cause-and-effect relationships. The research relied predominantly on secondary data from the World Bank Development Indicators. Given the nature of the research, ordinary time series data from Nigeria's Central Bank of Nigeria (CBN) Bulletin spanning the years 1981 to 2022 was utilized for the study.

The empirical framework for this study is anchored on the earlier studies of Chen. (2017) that investigated the relationship between shadow banking and monetary policy in China. The study employs both descriptive analysis and panel VAR model. Thus, the functional form of this model is defined below as:

$$GDPGR = F(SBS, MPR, BL, INF, REER) \quad (1)$$

The ARDL approach provides unbiased long-run estimates with valid t-statistics if some model repressors are endogenous. It provides a method of assessing the short-run and long-run effects of one variable on the other and separately both once an appropriate choice of the order of the ARDL model is made. For instance, if the variables are stationary at I(1) and I(0) for model one, the ARDL model was presented thus:

$$\Delta GDPGR_t = \delta_o + \sum_{i=1}^{p} \delta_1 \Delta GDPGR_{t-i} + \sum_{i=1}^{p} \delta_1 \Delta SBS_{t-i} + \sum_{i=0}^{p} \delta_2 \Delta MPR_{t-i} + \sum_{i=0}^{p} \delta_3 \Delta BL_{t-i} + \sum_{i=0}^{p} \delta_4 \Delta INF_{t-i} + \sum_{i=0}^{p} \delta_5 \Delta REER_{t-i} + GDPGR_{t-1} + \beta_1 SBS_{t-1} + \beta_2 MPR_{t-1} + \beta_3 BL_{t-1} + \beta_4 INF_{t-1} + \beta_5 REER_{t-1} + \mu_t \quad (2)$$

Note that the natural logarithmic (LN) transformation of data was applied.

Definition of Statistical Parameters

Variables	Definition	A priori Expectations	Source of Data
GDPGR	Economic Growth Rate		WDI 2022
SBS	Shadow banking	(+)	CBN 2022
MPR	Monetary Policy Rate	(+)	CBN 2022
BL	Bank Liquidity	(+)	CBN 2022
INFL	Inflation rate	(+)	CBN 2022
REER	Real effective exchange rate	(+)	CBN 2022
Ut	Error Term		
Ln	Natural Logarithm		
$a_0, b_0,$	The constant parameter		
$_{t-1}$	Lag time		

Source: Authors Compilation, 2023

VARIABLES

The following metrics were used as variables from extant theories, prior empirical works, and available data,

Dependent Variable

In this study, the dependent variable is Nigeria's Economic Growth Rate, represented by the growth in Gross Domestic Product (GDPGR).

Independent Variable

In this study, the independent variable is shadow banking services (SBS) provision. Shadow banking is primarily constructed using data from the Central Bank of Nigeria (CBN) regarding the assets of other financial intermediaries. Previous research, as indicated by Barbu (2016) and Altunbas (2009), has established a positive relationship between interest rates and shadow banking. This suggests that shadow banking tends to increase when bank liquidity decreases.

Explanatory Variables

Inflation

The Consumer Price Index (CPI) data used in this study is collected from the International Monetary Fund (IMF) and has been log-transformed to facilitate the analysis of the inflation rate. As Nelson (2008) highlighted, achieving price stability is the primary goal of monetary policy in most jurisdictions. Typically, a positive shock in the policy rate is expected to reduce the inflation rate, resulting in a decrease in the money supply.

Central Bank Policy rate

The central bank policy rate is the main monetary policy instrument in the model. Thus, it provides information about the central bank's monetary policy stance. In standard economic theory, a positive shock in the policy rate is expected to reduce the money supply, thereby decreasing bank liquidity and, in turn, decreasing output. The data for the policy rate are collected from the CBN database.

Bank Liquidity

Bank liquidity is measured using M1 and M2. It measures liquidity provision by banks, which the central bank backs. The analysis of bank liquidity has changed in the recent past as most studies have attempted to account for market-based and credit-based sources of liquidity in addition to deposits and central bank money. In this study, we consider bank liquidity at the basic level, which includes bank deposits only to allow for interaction between bank liquidity and shadow banking, providing some market-based liquidity.

RESULTS AND DISCUSSIONS

The annual time series data used for this study are presented in Table 1:

Table 1: Annual time series data

Year	Real GDP growth rate (GDPGR) %	Shadow banking services (SBS) ₦'billion	Monetary policy rate (MPR) %	Bank liquidity (BL) ₦' billion	Inflation rate (INFL) %	Real effective exchange rate (REER) ₦/$
1981	-13.13	9.67	6.00	19.48	20.81	320.83
1982	-6.80	11.61	8.00	22.66	7.70	329.03
1983	-10.92	12.24	8.00	26.70	23.21	389.42
1984	-1.12	12.90	10.00	30.07	17.82	536.91
1985	5.91	14.14	10.00	32.00	7.44	482.76
1986	0.06	18.30	10.00	39.68	5.72	263.79
1987	3.20	21.89	12.75	49.83	11.29	84.00
1988	7.33	25.47	12.75	58.03	54.51	85.31
1989	1.92	29.64	18.50	64.87	50.47	76.30
1990	11.78	35.44	18.50	82.96	7.36	71.06
1991	0.36	42.08	15.50	117.51	13.01	60.10
1992	4.63	76.10	17.50	159.19	44.59	49.78
1993	-2.04	91.24	26.00	226.16	57.17	54.44
1994	-1.81	145.10	13.50	295.03	57.03	100.63
1995	-0.07	204.95	13.50	385.14	72.84	160.18
1996	4.20	255.56	13.50	458.78	29.27	207.51
1997	2.94	316.58	13.50	584.38	8.53	236.03
1998	2.58	370.71	13.50	694.62	10.00	273.01
1999	0.58	452.41	18.00	1070.02	6.62	69.20
2000	5.02	587.49	14.00	1568.84	6.93	70.16
2001	5.92	827.12	20.50	2247.04	18.87	78.18
2002	15.33	938.27	16.50	2766.88	12.88	78.42
2003	7.35	1191.55	15.00	3047.86	14.03	73.67
2004	9.25	1507.89	15.00	3753.28	15.00	75.32
2005	6.44	1950.38	13.00	4515.12	17.86	86.27
2006	6.06	2556.92	10.00	7172.93	8.23	91.44
2007	6.59	621.54	9.50	10981.69	5.39	90.53
2008	6.76	1420.47	9.75	15919.56	11.58	99.56
2009	8.04	1791.49	6.00	17522.86	12.54	92.64
2010	8.01	1470.03	6.25	17331.56	13.74	100.00
2011	5.31	5221.02	12.00	19396.63	10.83	100.50
2012	4.23	5357.06	12.00	21288.14	12.22	110.50
2013	6.67	5112.65	12.00	24301.21	8.50	117.53
2014	6.31	5468.43	13.00	27526.42	8.05	124.82
2015	2.65	5394.75	11.00	28173.26	9.01	119.85
2016	-1.62	5691.58	14.00	31682.82	15.70	110.86
2017	0.81	5802.76	14.00	34593.89	16.50	101.45
2018	1.92	7797.47	14.00	37705.56	12.10	109.90
2019	2.21	7717.91	13.50	42523.85	11.40	124.19
2020	-1.79	8817.09	11.50	49870.09	13.25	119.51
2021	3.65	8141.16	11.50	56211.55	16.95	117.10
2022	1.85	7890.66	13.65	61082.86	18.77	137.99

Source: World Development Indicators (WDI) and CBN Statistical Bulletin (2021) and CBN Quarterly Statistical Bulletin (2022).

Descriptive Statistic

First, the data analysis dealt with the descriptive statistics and skewness/kurtosis tests for normality which shows the distributional properties of the annual time series data. The outcome of the descriptive statistics is displayed in Table 2:

Table 2: Summary statistics

	GDPGR	SBS	MPR	BL	INFL	REER
Mean	3.013571	2271.946	13.01548	12514.31	18.94571	147.1590
Median	3.425000	724.3300	13.25000	2506.960	12.94500	101.0400
Maximum	15.33000	8817.090	26.00000	61082.86	72.84000	536.9100
Minimum	-13.13000	9.670000	6.000000	19.48000	5.390000	49.78000
Std. Dev.	5.322600	2885.353	3.911872	17318.14	16.45511	114.3715
Skewness	-0.811455	1.031977	0.730573	1.332335	1.877591	1.970857
Kurtosis	4.704329	2.523771	4.635680	3.713928	5.438522	6.173533
Jarque-Bera	9.692507	7.851732	8.418197	13.31778	35.08361	44.81474
Probability	0.007858	0.019725	0.014860	0.001283	0.000000	0.000000
Observations	42	42	42	42	42	42

Source: Statistical Software – EViews 10, 2023

Table 2 presents the summary (descriptive) statistics of the dependent and independent variables of the study. The mean GDPGR was 3.01 with a standard deviation of 5.322600, indicating a significant dispersion of the series from a normal trend, indicating considerable variability in GDPGR. It is evident from the descriptive statistics that the maximum GDPGR of 15.33000, which occurred in 2002 probably due to the generation of revenue to crude oil exports and the minimum of -13.13 in 1981 as a result of the economic recession that arose from monetary policy tightening in a bid to curb inflation and the ability to sustain domestic consumption with oil wealth (Mba, 2021). The skewness value of -0.81 implies that the GDPGR variable was negatively skewed, with a long tail to the left. This further justifies the largely declining GDPGR. The Kurtosis value of 4.70 > 3 is an indication that the distribution of the GDPGR series is leptokurtic (peaked-curve), implying that the GDPGR series has more values that are higher than the sample mean (3.01). The probability value (0.01 < 0.05) of the Jarque-Bera led to the rejection of the null hypothesis that the GDPGR series is normally distributed, thus implying an abnormal distribution of the series.

SBS turned out with a mean of 2271.946 with a maximum value of 8817.090 linked to 2021, and its minimum value of 9.67 associated with the year 1981, probably due to the slow development of non-bank financial institutions in the 1980s. The standard deviation of 2885.353, compared to the mean value, indicates minimal variation in the SBS series. The value of the skewness (1.03) is indicative of a series that is not normally skewed as the value is greater than 1. The Kurtosis, on the other hand, turned out to be 2.52 < 3, which could imply that SBS recorded lower values than its mean, and it was found from Table 2 that these low series of SBS were recorded between 1981 and the early 2000s, implying that SBS has been increasing in recent decades. The Jarque-Bera p-value of 0.019 suggests that the null hypothesis of normal distribution be rejected thus implying that the SBS series was not normally distributed.

Regarding MPR, the mean value indicates an average of 13.02 with a maximum value of 26.00 recorded in 1993, probably due to the austerity measure embarked upon by the Abacha administration, while the minimum value of 6.00 was in 1981. The standard deviation of 3.91 shows that the variations in the series were not considerable; hence, the MPR series over the period studied was not volatile. With a skewness of 0.73, it was said that the MPR series has a long right tail. Its Kurtosis value of 4.63 > 3 indicates a leptokurtic (peaked curve) distribution, which suggests higher values than the mean, meaning that the MPR has been increasing rapidly in recent years plausibly due to the several efforts made to combat the macroeconomic upheavals that have undermined the advancement of the Nigerian economy.

With regards to bank liquidity, a sum of 12514.31 was recorded on average, with its maximum value of 61082.86 and its minimum value of 19.48 recorded in the years 2022 and 1981, respectively, implying that bank liquidity (BL) has been on persistent increase over the study period plausibly due to the expanding economy of Nigeria. A standard deviation 17318.14 indicates a minute variation from the mean, implying a slight variation. The skewness of 1.33 > 1 shows that the BL series was not normally skewed. The Kurtosis of 3.71 > 3 indicates a leptokurtic distribution of a series with higher values than its mean. The p-value (0.00 < 0.05) suggests that the BL series are not normally distributed.

Again, on average, INFL hit 18.95, with its peak as indicated by its maximum value of 72.84 in 1995 and its minimum value of 5.39 in 2007. The standard deviation of 16.46 shows an extent of dispersion from the mean value, suggesting some degree of variation in the series. The outrageous skewness level of 1.88 > 1

indicates that INFL in Nigeria was largely upward trending. The Kurtosis (5.44 > 3) backs this as it indicates higher values of INFL than the mean. The probability value (0.00) of the INFL series suggests a non-normal distribution of the series ranging from 1981 to 2022.

Also, the REER, which reflects the nominal exchange rate multiplied by the ratio of prices between Nigeria and its trade partners, averaged 147.16. The maximum and minimum values were 536.91 and 49.78 in 1984 and 1992, respectively. The high 536.91 recorded in 1984 implies that people in Nigeria could get more foreign goods for an equivalent amount of domestic goods at that time. The standard deviation (114.3715) entirely reveals that REER was volatile as it exceeds the mean value. The skewness value of 1.97 implies that the series of REER was not normally skewed, and the Kurtosis value of 6.173 > 3 shows that the distribution of REER was leptokurtic. The Jarque-Bera probability value of 0.00 indicates that the distribution of the REER series was not normally distributed.

Based on the outcome of the descriptive statistics, especially the finding that the variables were not normally distributed, natural logarithmic transformation was used to obtain a symmetrical distribution. Also, t*he logarithm 'compresses' larger numbers relatively more than smaller numbers, so it is useful to stabilize the variance over a time series*. Again, the GDPGR series is exempted from the natural logarithmic transformation (LN) because it contains a mixture of positive and negative figures. Following that, the variables exhibited traits of non-normal distribution; estimating the model with the Ordinary Least Squares would yield a spurious result.

Test For Stationarity

The test for stationarity was done using the Augmented Dickey-Fuller (ADF) test. The results of the ADF tests are presented in Table 3:

Table 3: Unit root test (Augmented Dickey-Fuller, ADF test)

Variables	Constant without trend		Constant with trend		Order of Integration
	Level	1st difference	Level	1st difference	
GDPGR	-3.185952**	-	-10.82116***	-	I(0)
LNSBS	-1.298989	-8.383529***	-1.981263	-8.473802***	I(1)
LNMPR	-3.276496**	-	-7.763654***	-	I(0)
LNBL	-1.808335	-3.920443***	-0.224591	-3.759622**	I(1)
LNINFL	-3.528867***	-	-4.483039***	-	I(0)
LNREER	-2.290495	-4.843762***	-2.819311	-4.884757***	I(1)

Source: Statistical Software – EViews 10, 2023

The ADF unit root test was used in this study to determine whether a unit root existed in each of the time series variables. According to the ADF test's findings, all variables (except LNSBS, LNBL, and LNREER) were discovered to be stationary at all levels (Intercept, Intercept, and Trend). The variables were stationary at mixed levels, I(0) and I(1), according to the findings of the ADF tests. At I (0), only GDPGR and LNINFL remained stationary. At level I(0), LNSBS, LNBL, and LNREER were non-stationary. Additional ADF tests, therefore, showed that they were stationary at I (1). The time series data for the dependent and independent variables were thus shown to be stationary at mixed levels of integration. The ARDL approach to the co-integration method, the most appropriate method for this sort of dataset, was used in this work in light of the aforementioned facts (Pesaran et al., 2001).

Diagnostic Tests

This study applied the diagnostic test to check the model's stability, normality, heteroskedasticity, and serial correlation. The Lagrange Multiplier (LM) test checks the serial correlation of the residual diagnostic in the model. The heteroskedasticity test is for checking the Heteroskedastic problem of the model. The normality test also checks for the normality distribution. The results of these tests are shown in Table 4.

Table 4: Diagnostic test result

Test	Test Statistic	P-value
Breusch-Godfrey Serial Correlation LM Test:	F-statistic = 0.447008	0.6464
Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic = 0.846564	0.7190
Jarque-Bera	X^2 = 0.410815	0.8143

Source: Statistical Software – EViews 10, 2023

The p-value of all tests should be greater than 5% to determine diagnostic tests. In Table 4, the LM test of HO showed no serial correlation. The p-value for the LM serial correlation test was 0.6464, which was greater than 5%, so HO was accepted, which meant that there was no serial correlation among the variables. HO for heteroskedasticity was that there was no heteroskedasticity problem. Here p-value for heteroskedasticity was 0.7190, which is greater than 5%. So, HO was rejected, which means there were no heteroskedasticity problems. Normality test results and CUSUM rests are shown in the following diagrams. The normality test showed that the residuals were normally distributed.

This work used the cumulative sum of residual (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests to assess the stability of the ARDL model. The results of the tests were displayed in Figures 2 and.3, which lay inside the critical boundaries symbolized by two straight lines. This indicated that the model remained steady and stable throughout that time.

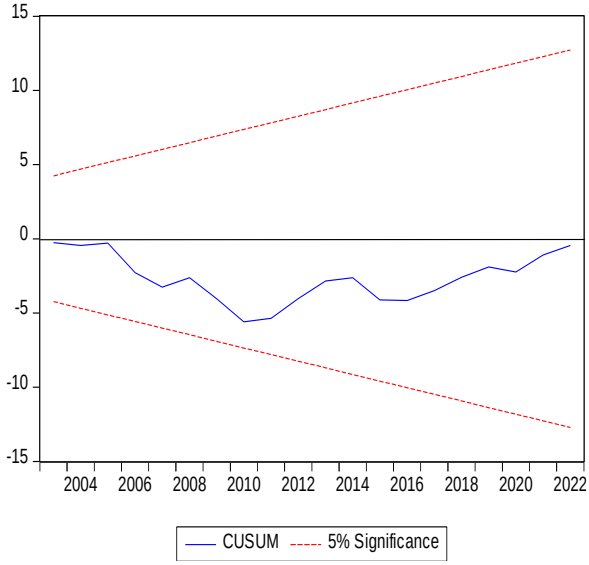

Figure 2: CUSUM test

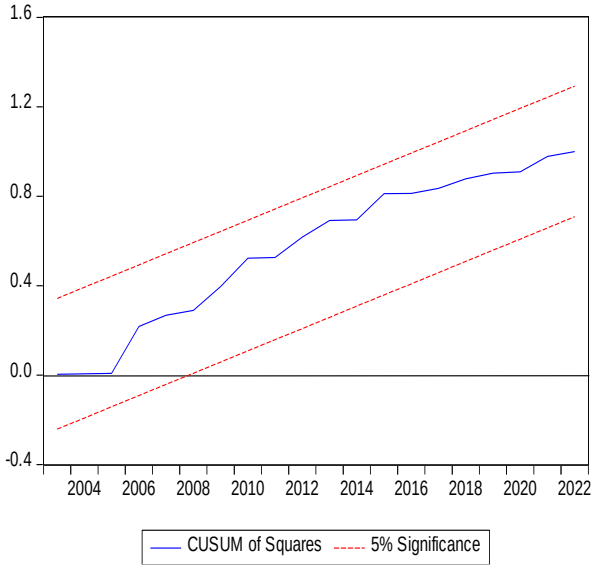

Figure 3: CUSUMSQ test

The Ramsey RESET test (Table 5) also shows a statistically negligible t- and F-statistic at the 5% significance level. This may indicate that the estimated model was specified correctly and does not experience bias due to omitted variables.

Table 5: Ramsey RESET test

	Value	Probability
t-statistic	1.322432	0.1946
F-statistic	1.748826	0.1946

Source: Statistical Software – EViews 10, 2023

ARDL Bounds Testing Approach to Co-Integration

This study employed the ARDL bound test approach to analyze the long-run co-integration between the variables after confirming the variables' stationary levels. The unit root test findings showed that the variables appeared stationary at mixed levels. Before using the ARDL bound test, the study checked the model's ideal lag duration. The order of the ARDL model was primarily decided using the selection criteria for the best lags. The author used the AIC method (Akaike Information Criterion) to select the lag length. He discovered that ARDL(1, 2, 3, 3, 1, 2) was the ideal length, as shown in Figure 4

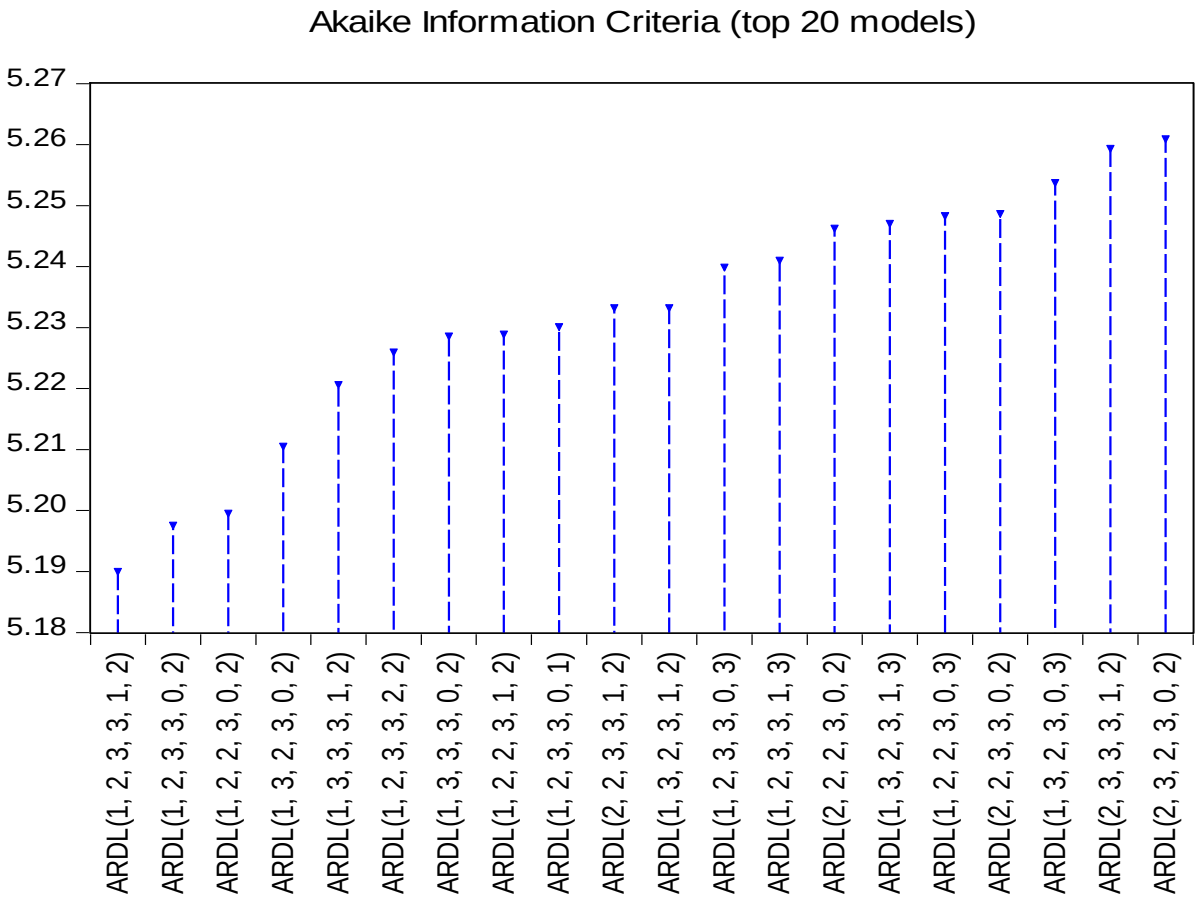

Figure 4: Akaike Information Criteria (AIC)

The decision of whether the bound test F-statistic value is greater or less than the upper bound's crucial values depends on the result of the bound test. Suppose the null hypothesis is accepted—that there is no relationship in levels, i.e., no co-integration between the included variables. In that case, there is long-run co-integration, which indicates that the F-statistic is higher than the upper bound's critical values. The null hypothesis is accepted if the F-statistic is less than the upper bound's critical values and there is no long-run co-integration.

Table 6: ARDL bound test result

Null Hypothesis: No long-run relationships exist		
Test statistic	Value	K
F-statistic	9.991215	5
Critical value bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.75	3.79
5%	3.12	4.25
2.5%	3.49	4.67
1%	3.93	5.23

Source: Statistical Software – EViews 10, 2023

The result illustrated that the value of the F-statistic (9.991215) was larger than the critical value of both the lower and upper bound at 1%, 5%, and 10% levels of significance. This confirmation was the presence of a long-run relationship among GDPGR, LNSBS, LNMPR, LNBL, LNINFL, and LNREER. In the ARDL bound test, the F statistic was 9.991215, higher than the critical values of both lower and upper bound. The null hypothesis HO failed to accept at a 1% significance level; thus, co-integration existed for this model. Therefore, a long-run cointegrated relationship existed between the dependent variable (GDPGR) and independent variables (LNSBS, LNMPR, LNBL, LNINFL, and LNREER).

Equation (3) displayed the co-integration relationship.

EC = GDPGR – (0.8821*LNSBS – 0.13855*LNMPR – 0.1083*LNBL – 0.5891*LNINFL – 0.1029*LNREER) . (3)

Looking at the cointegrating equation, it was realized that though LNBSS exhibited an increasing effect on GDPGR, the dynamics of LNMPR, LNBL, ININFL, and LNREER appeared to have undermined it. This means that in the adjustment mechanism, the expected positive effect of LNSBS could be hindered by the changes LNMPR, LNBL, ININFL, and LNREER, thus implying that the effect of LNSBS on GDPGR could be a result of its interactions with other macroeconomic variables over time.

ARDL Long-Run Coefficients

The bound test findings supported the existence of a long-run co-integration connection between the independent variables (LNSBS, LNMPR, LNBL, ININFL, and LNREER) and the dependent variable (GDPGR), with ARDL having the best lag structure (1, 2, 3, 3, 1). The outcomes for ARDL long-run coefficients are displayed in the following Table.

Table 7: Long run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
LNSBS	0.882178	0.312533	2.824506	0.0105	**
LNMPR	-0.138551	0.061094	-2.267833	0.0346	**
LNBL	-0.108311	0.048399	-2.237877	0.0368	**
LNINFL	-0.589137	0.139171	-4.233188	0.0004	***
LNREER	-0.102928	0.022584	-4.557756	0.0002	***

Source: Statistical Software – EViews 10, 2023

Key: *** and ** indicate significance at 1% and 5% levels, respectively

Table 7 shows the estimation of coefficients for the long run with the ARDL (1, 2, 3, 3, 1) model. In this study, the ARDL model (1, 2, 3, 3, 1) was chosen by AIC. The results indicated that LNSBS had a positive effect on GDPGR in Nigeria. On the other hand, LNMPR, LNBL, LNINFL, and LNREER negatively affected GDPGR in the long run. The positive coefficient of LNSBS showed that a percentage change in shadow banking services led to an approximately 8.8% increase in GDPGR. The coefficient of LNMPR indicated that a percentage change in the monetary policy rate led to a 1.4% decrease in GDPGR. It was also realized that a percentage change in LNBL caused a diminishing effect on GDPGR up to 1.1%. Similarly, it was found that the changes in LNREER led to an approximately 1.0% decrease in GDPGR in the long run.

Error Correction Mechanism (ECM)

In Table 8, the error correction mechanism (ECM) was applied to check the short-run effects of shadow banking services on the Nigerian economy.

In Table 8, the ECM was applied to check the short-run effects of shadow banking on the Nigerian economy. As shown in Table8 , the value of the coefficient of the error correction term, which is denoted as CointEq(-1), was significant and had a negative sign. This confirmed that there was a co-integration relationship between the variables. About 73% with a statistical significance of 1% disequilibria from the previous year's shock converge back to the long-run equilibrium in the current year.

The short-run coefficient of D(LNSBS) implied that shadow banking services marginally increased the level of GDPGR, meaning that the effect of shadow banking services on the Nigerian economy was not instantaneous, as shown by the statistical significance of the one-period lag of shadow banking services denoted as D(LNSBS(-1)). Also, the negative and statistically significant coefficient of D(LNMPR) implied that adjustments to the MPR brought about an immediate decrease in GDPGR. However, it turned out positive and significant after a period of lag. The coefficient of D(LNBL) denoted that GDPGR decreased considerably and instantaneously due to a change in bank liquidity. However, it turned positive for the period lags of one and two. Regarding the coefficients of D(LNINFL) and D(LNREER), it was found that a shift in the trend of inflation and real effective exchange rate brought about a sharp decline in GDPGR, implying that a change in inflation and real effective exchange rate led to an immediate decline in GDPGR.

Table 8: Short-run result with an error correction mechanism

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
C	151.7203	17.41059	8.714253	0.0000	***
@TREND	0.602595	0.089235	6.752902	0.0000	***
D(LNSBS)	0.298252	0.149535	1.994530	0.0599	*
D(LNSBS(-1))	-0.440371	0.131061	-3.360046	0.0031	***
D(LNMPR)	-0.604211	0.237969	-2.539032	0.0195	**
D(LNMPR(-1))	0.756592	0.259322	2.917577	0.0085	***
D(LNMPR(-2))	-0.338595	0.195546	-1.731536	0.0988	*
D(LNBL)	-0.318923	0.056886	-5.606353	0.0000	***
D(LNBL(-1))	0.772891	0.794357	0.972977	0.3422	
D(LNBL(-2))	0.235593	0.065041	3.622223	0.0017	***
D(LNINFL)	-0.571981	0.097411	-5.871832	0.0000	***
D(LNREER)	-0.447827	0.152719	-2.932359	0.0082	***
D(LNREER(-1))	0.486456	0.176125	2.761993	0.0120	**
CointEq(-1)	-0.726550	0.146191	-4.969868	0.0000	***
R-squared	0.815335				
Adjusted R-squared	0.719309				
F-statistic	8.490790				
Prob(F-statistic)	0.000003				
Durbin-Watson stat	2.105219				

Source: Statistical Software – EViews 10, 2023
Key: *** and ** indicate significance at 1% and 5% levels, respectively

However, the differences in the long-run and short-run coefficients of the independent variables indicated that the effect of shadow banking on the Nigerian economy could vary with time probably due to the dynamics of the macroeconomic economic space of the country.

Shadow banking activities have no significant effect on the Nigerian economy.
The probability value (0.0105 < 0.05) of LNSBS indicates that shadow banking services have a significant effect on the Nigerian economy. Based on this premise, the null hypothesis of no significance was rejected as the study concluded that shadow banking services have a statistically significant effect on the Nigerian economy.

Discussion of Findings
Based on the long-run results, the empirical findings confirmed that the Nigerian economy largely relies on shadow banking services. This supports the argument that shadow banking reduces dependency on traditional banks as a source of credit, benefiting the economy by providing an additional lending source and diversification in the financial system. This outcome aligns with the principles of financial liberalization outlined in the McKinnon and Shaw hypothesis. The analysis also attributes this result to the substantial growth of institutional groups (shadow banks) compared to the formal banking system globally (Nabilou& André, 2019). Additionally, the entry of FinTechs and BigTechs into the shadow financial sector, as highlighted by Apostoaie and Bilan (2020), has contributed to the proliferation of shadow banks and their positive impact on economic growth, making their services more accessible, useful, and affordable to individuals excluded from the formal banking system.

It is clear from the review of empirical literature that there are economic advantages associated with shadow banking. However, whether it encourages economic production remains a subject of debate. Some studies, such as those by Kim (2021) and Tang and Wang (2021), support the idea that shadow banking can have sustainable effects on economic growth. Adrian and Ashcraft (2016) attribute these sustainable effects to shadow banking services' higher profitability than formal banks. Conversely, Aftab and Varotto (2017) find that liquidity regulations may hinder the potential economic benefits of shadow banking through monetary policy, a perspective supported by Bruno and Shin (2015), who highlight the impact of cross-border liquidity regulation on shadow banks and its implications for real exchange rates. Moreira and Savov (2017) provide evidence of the vulnerability of shadow bank liabilities to sudden withdrawals across national boundaries, further underscoring the complexities of shadow banking's effects on the economy.

However, it is essential to note that not all empirical findings align with the positive view of shadow banking. Studies by Duca (2020), Li (2014), Bertay (2020), and Harutyunyan (2015) suggest that shadow banking services may not be sustainable due to their interaction with policy variables aimed at regulating their activities to promote formal banking. For example, when there is an interest rate shock (contractionary monetary policy), commercial banks may contract while shadow banks grow, indicating that higher bank liquidity could reduce shadow banking activities (Acharya, 2020; Xiao, 2020; Nelson et al., 2018). This explains the negative and statistically significant relationship between bank liquidity and shadow banking found in this study, suggesting that changes in the liquidity of formal banks can influence the extent to which shadow banking services impact economic growth. Additionally, findings from Haisen and Yazdifar (2020) and Samson (2021) indicate that shadow banks may exert inflationary pressure on the economy, leading to a devaluation of money and liquidity crises for formal banks due to monetary adjustments. This aligns with the negative and significant effects of bank liquidity, inflation, and real exchange rates in this study, in line with the financial contagion theory.

CONCLUSION AND RECOMMENDATIONS

Having explored the effect of shadow banking services on the Nigerian economy from 1981 to 2022 using an ARDL model, the following findings were made:
Based on the long-run estimation, it was found that shadow banking services had a positive and statistically significant effect on the Nigerian economy.

This study proposes to analyze the effect of shadow banking services on the Nigerian economy. At the same time, monetary policy rate, bank liquidity, inflation, and exchange rate were control variables for 1981-2022. The Autoregressive Distributed Lag (ARDL) model was used for the study. The outcomes showed that shadow banking services enhanced economic growth in the long run. However, they did not exert an immediate effect in the short run, indicating a possible time-varying effect. On the other hand, the speed of the adjustment mechanism was indicative of a sustainable effect of shadow banking over the long term.

In the long run, the negative and statistically significant coefficients of the control variables (monetary policy rate, bank liquidity, inflation, and exchange rate) indicated that the potential effect of shadow banking was subjected to other macroeconomic factors, especially the regulations of the CBN through monetary policy rate. Shadow banking in Nigeria was tightly regulated, mainly by the Central Bank of Nigeria; it was found that such regulation could be at the policy level. This was more obvious from the significant short-run monetary policy rate of the Central Bank.

This study met its stated objectives by establishing that shadow banking has a significant and sustainable effect on the Nigerian economy. Thus, it was concluded that shadow banking was an essential factor in the economic growth of Nigeria, meaning that it was an integral part of the economy and a veritable source of funds.

Policy Implications

Based on the findings arising from the results of this study, the following recommendations were made:
Since it has been established that shadow banking services enhanced the Nigerian economy, the monetary authorities should encourage it following the increasing role of financial intermediation in the country. Hence, it is essential to note the potential buildup of systematic risk inherent in shadow banking services that could hinder its positive effects through effective regulation.

The study revealed that shadow banking services' long-lasting impact on the Nigerian economy is necessary to create mechanisms to include shadow banking in traditional banking services to properly control and oversee them. This is crucial because it is likely to foster an environment where a strong, self-reinforcing panic could start due to a dependence on excessive debt, generally poor risk management, and regulatory supervision gaps and vulnerabilities.

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