

The Crowding-Out Effect: Modelling the Impact of Government Borrowing, Inflation & Monetary Policy on Access to Sustainable Finance for Affordable Housing & Social Infrastructure Development

Abel Eseoghene Owotemu*, Yemi Kale

Department of Business Administration, Faculty of Management Sciences, Nile University of Nigeria, Abuja, Nigeria

Email: *abelowotemu@hotmail.com

How to cite this paper: Owotemu, A. E., & Kale, Y. (2025). The Crowding-Out Effect: Modelling the Impact of Government Borrowing, Inflation & Monetary Policy on Access to Sustainable Finance for Affordable Housing & Social Infrastructure Development. *Modern Economy*, 16, 201-225.

<https://doi.org/10.4236/me.2025.161009>

Received: September 16, 2024

Accepted: January 18, 2025

Published: January 21, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

The provision of affordable housing in Nigeria remains a critical challenge, exacerbated by limited access to finance for housing developers and homebuyers. This study investigates the crowding-out effect of government borrowing on affordable housing finance and development in Nigeria. The research examines how government debt dynamics for domestic and external borrowing affect access to finance for housing developers and low-income homebuyers through mechanisms like rising interest rates and limited credit availability. The study examines the crowding-out effect of Nigerian government borrowing on affordable housing finance and the development of social infrastructure, utilizing empirical data from 2014 to 2023. It investigates how domestic and external borrowing impact the ability of housing developers and low-income homebuyers to secure financing through increased interest rates and the contraction of credit supply. Leveraging recent data from authoritative sources such as the Central Bank of Nigeria, the National Bureau of Statistics, and the World Bank, the study employs econometric modelling and descriptive analysis to evaluate these impacts. Key findings indicate that the crowding-out effect of domestic debt is more pronounced due to its direct competition in the local financial market; the escalation of interest rates suppresses housing finance, further limiting the penetration rate of the mortgage market; the exchange rate risk associated with external debt increases construction costs, posing an indirect threat to housing affordability and social infrastructure development, underscoring the critical need for fiscal discipline and innovative solutions like blended and Catalytic funds to improve the delivery of social infrastructure and the housing

sector's resilience. Key recommendations include adopting debt management reforms, promoting specialized housing finance instruments, and fostering public-private partnerships.

Keywords

Crowding-Out Effect, Government Borrowing, Affordable Housing Finance, Nigeria, Fiscal Policy, Debt Management, Interest Rates, Social Infrastructure Development

1. Introduction

The demand for affordable housing in Nigeria is immense, driven by a burgeoning population and rapid urbanization (Centre for Affordable Housing Finance Africa, 2023). Yet, the housing sector faces critical barriers, chief among them being the lack of access to adequate finance for housing developers and potential homeowners (Ekpo, 2019). Against this backdrop, government borrowing has emerged as a significant factor influencing financial markets and housing affordability (Ekpo, 2019).

According to (Boyce, 2023) the crowding-out effect, where increased government borrowing leads to reduced availability of credit for the private sector, exacerbates these challenges. By competing with private sector borrowers for limited financial resources, government borrowing raises interest rates and restricts credit flows to sectors like affordable housing and social infrastructure development (Boyce, 2023).

This study examines the implications of government debt on affordable housing finance and infrastructure development in Nigeria, focusing on the dynamics of government borrowing as a function of debt rates. Previous research indicates that domestic debt tends to exert a stronger crowding-out effect due to its direct impact on local financial markets (Ekpo, 2019). The Nigerian housing sector, already plagued by issues such as high construction costs, inadequate infrastructure, and an underdeveloped mortgage market, is further strained by limited access to long-term financing options (Aguolu, 2024).

The research objectives include exploring the mechanisms through which government borrowing impacts housing finance, identifying the magnitude and significance of these effects, and proposing actionable recommendations to mitigate the negative outcomes. The study is grounded in recent data from credible sources, including the Central Bank of Nigeria and the National Bureau of Statistics, ensuring the analysis reflects current realities (Aguolu, 2024).

The paper also addresses key research questions, such as:

- 1) How does the rates on government debt influence access to finance for affordable housing and social development?
- 2) What are the channels and mechanisms through which the crowding-out

effect manifests in housing and social infrastructure sector?

3) What policy interventions can enhance the availability of affordable housing finance and social infrastructure while maintaining fiscal sustainability?

This introduction provides the foundation for understanding the interplay between government borrowing, housing finance and social infrastructure development, setting the stage for the subsequent sections that delve into theoretical and empirical insights.

2. Literature Review

The crowding-out effect, which underscores the impact of government borrowing on reducing private sector credit availability, has been extensively studied in economic literature. However, its intersection with housing finance, particularly in Nigeria, is less explored. This section synthesizes relevant studies to provide a comprehensive understanding of the issue.

2.1. The Crowding-Out Effect and Housing Finance

The relationship between government borrowing and private sector investment is well-documented in global and Nigerian contexts. [Nnanna \(2023\)](#) found that while external debt negatively impacts Nigeria's economic growth, domestic debt creates a stronger crowding-out effect by directly constraining local financial markets. Similarly, [Anoke et al. \(2020\)](#) identified that domestic debt, while less volatile than external debt, significantly reduces private sector access to affordable credit, with housing finance being a particularly affected sector.

In addition, [Chinanuife & Anyanwu \(2021\)](#) emphasized the high cost of borrowing in Nigeria, driven partly by government competition for domestic financial resources. Their findings illustrate how rising interest rates discourage private investments in long-term projects like housing and social infrastructure development, further widening Nigeria's housing deficit, estimated at over 20 million units as of 2020. The limited supply of affordable housing, coupled with high construction costs and inadequate infrastructure, exacerbates the problem, as highlighted by [\(PwC, 2019\)](#).

2.2. Global Comparisons in Housing Finance

Studies reveal how government debt influences housing finance differently across economies. For instance, [Van Hoenselaar et al. \(2021\)](#) noted that countries with well-developed mortgage markets, such as South Africa and the United Kingdom, are less vulnerable to crowding-out effects due to diversified funding sources. In contrast, Nigeria's mortgage-to-GDP ratio of less than 1% lags significantly behind South Africa (31%) and OECD averages (51%), highlighting the structural weaknesses in its housing finance system.

2.3. Recent Trends in Government Borrowing

From 2014 to 2023, Nigeria's government borrowing patterns have shifted

considerably. Data from the (Central Bank of Nigeria, 2023a) show an increasing reliance on domestic debt, preferred for its insulation from foreign exchange risks. However, this trend exacerbates the crowding-out effect on local credit markets, making it harder for housing developers to secure long-term financing. External debt, though less burdensome on domestic markets, introduces vulnerabilities such as exchange rate fluctuations that increase the cost of imported construction materials.

Research by Oladipo and Salami (2022) observed that the rising cost of debt servicing in Nigeria reduces fiscal flexibility, further constraining government efforts to provide targeted subsidies or incentives for the housing sector. This highlights the dual challenge posed by government debt: not only does it restrict private sector access to credit, but it also limits public sector interventions in housing development.

Despite extensive research on government borrowing, gaps remain in understanding its sector-specific implications for housing finance. Most studies focus on aggregate investment effects, with limited insights into how government debt influences housing finance mechanisms, particularly in emerging markets like Nigeria.

Furthermore, while global studies suggest policy options to mitigate crowding-out effects, localized solutions tailored to Nigeria's unique economic and institutional contexts are sparse. This study seeks to bridge these gaps by analyzing recent data (2014-2024) on government debt rates, inflation, monetary policy, and housing finance in Nigeria (Oladipo & Salami, 2022). It aims to identify the specific channels through which government borrowing impacts housing finance and social infrastructure development to propose actionable recommendations for mitigating these effects.

2.4. Theoretical Review & Framework

The theoretical framework of this study is anchored on the crowding-out effect theory, which explains how government borrowing can suppress private sector investments by increasing competition for limited financial resources. This section examines the underlying theories and their relevance to the relationship between government debt and affordable housing finance in Nigeria.

2.5. The Crowding-Out Effect Theory

The crowding-out effect theory posits that when governments increase borrowing to finance deficits, they compete with the private sector for scarce capital. This competition typically leads to higher interest rates, reduced credit availability, and an overall decline in private sector investments (Joseph Jato & Nwankwo, 2023). The theory is particularly relevant in emerging economies like Nigeria, where financial markets are less developed, and credit supply is constrained. According to Investopedia (2024a), Keynesian economics notes that government borrowing can have expansionary effects when funds are directed toward productive public

investments. However, when borrowing finances recurrent expenditures or unproductive projects, it can lead to the crowding-out of private investments, as observed in Nigeria's housing sector (Paul & Akpan, 2024). Chinanuife & Anyanwu (2021) emphasize that in economies with shallow financial markets, like Nigeria, the crowding-out effect is more pronounced due to limited alternative funding sources for private borrowers.

2.5.1. Housing Finance and Financial Repression Theory

The financial repression theory provides additional context for understanding housing finance constraints in emerging markets like Nigeria. This theory suggests that excessive government control over financial markets through mechanisms such as interest rate caps, high reserve requirements, and directed credit policies can stifle private sector growth (Investopedia, 2024b). In Nigeria, government borrowing often leads to financial market distortions, further limiting the availability of affordable, long-term credit for the delivery of social infrastructure by housing developers and for homebuyers (Investopedia, 2024c).

2.5.2. Debt Sustainability, Social Infrastructure, and Housing Finance

According to the Central Bank of Nigeria (2022b), the debt sustainability framework highlights the importance of managing public debt to prevent adverse spillovers into private credit markets. High levels of domestic debt, as seen in Nigeria, can crowd out private investments by absorbing a significant share of domestic savings. This reduces the funds available for housing finance and increases borrowing costs for the private sector (Yusuf & Mohd, 2021). Yusuf and Mohd (2021) illustrate that domestic debt in Nigeria exerts a stronger crowding-out effect than external debt due to its direct impact on local financial markets (Nnana, 2023).

2.5.3. The Dual-Impact Channel Framework

This study also incorporates the dual-impact channel framework to analyze how government borrowing influences the housing sector through two primary mechanisms: the interest rate channel and the exchange rate channel. Increased government borrowing raises interest rates, making it costlier for housing developers and low-income homebuyers to secure loans. External borrowing can lead to currency appreciation, increasing the cost of imported construction materials and reducing housing affordability (World Bank, 2024).

2.6. Moderating Effects of International Lending Environments, Exchange Rate Policies, and Regional Economic Integration

The international lending environment can moderate the crowding-out effect by providing alternative sources of funding for private borrowers. For instance, well-developed sovereign bond markets can reduce the crowding-out effect by allowing banks to use government bonds as collateral in the interbank market, thereby raising secured funding and reducing the need to curtail credit supply to firms (Agarwal et al., 2024). Exchange rate policies also play a crucial role in moderating the crowding-out effect. Flexible exchange rate policies can help absorb external

shocks and reduce the impact of government borrowing on domestic interest rates. Regional economic integration can further mitigate the crowding-out effect by promoting financial stability and enhancing access to regional capital markets, thereby providing additional funding sources for private investments (World Bank, 2024).

2.7. Applicability to Nigeria's Context

The theoretical frameworks outlined above align closely with Nigeria's economic realities. The country's underdeveloped financial markets, heavy reliance on domestic borrowing, and limited housing finance options create an environment where the crowding-out effect significantly hampers affordable housing and social infrastructure (Nnana, 2023). The study leverages these theories to analyze how government debt influences housing finance dynamics in Nigeria and to propose strategies for mitigating adverse effects. To analyze the relationships between government fiscal deficits, access to sustainable finance for home acquisition, and social infrastructure development, the study also looked at the application of the following models:

Fiscal Policy Models: This model examines the impact of government fiscal policy on the economy, including the effects of fiscal deficits on interest rates, credit availability, and economic growth (Saibu, 2018).

Monetary Policy Models: This model analyses the impact of central bank decisions on interest rates, credit availability, and economic growth, including the effects of fiscal deficits on monetary policy (Nabieu et al., 2023).

Sustainable Finance Models: This model examines the impact of sustainable finance on access to credit for home acquisition and social infrastructure development, including the effects of fiscal deficits on sustainable finance (Baret & Menuet, 2024).

Infrastructure Development Model: This model analyses the impact of infrastructure development on economic growth and social welfare, including the effects of fiscal deficits on infrastructure development (Foster et al., 2023) and Public Private Partnerships on affordable housing and social infrastructure development (Owotemu et al., 2022). The conceptual framework for the study as depicted in **Figure 1** below is adopted as per the works of (Bista & Thakur, 2023) and (Nabieu, Anarfi, & Appiah-Konadu, 2023).

2.8. Literature Gap

Despite extensive research on government borrowing and its implications for private sector investments, significant gaps remain in understanding the specific impacts of the crowding-out effect on affordable housing finance in Nigeria. This section highlights these gaps and establishes the need for the current study.

The majority of existing studies on the crowding-out effect in Nigeria, such as those by (Yusuf & Mohd, 2021) and (Anoke et al., 2020), focus on aggregate private sector investments or overall economic growth. While these studies

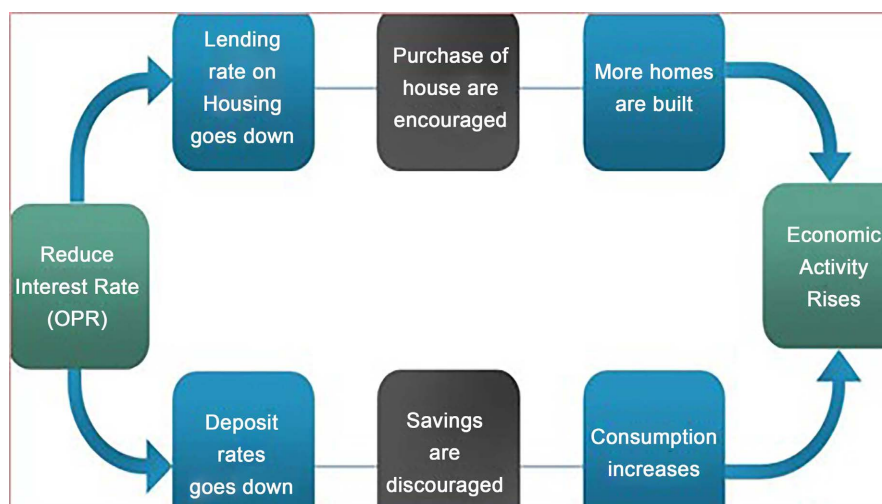


Figure 1. Adopted study conceptual framework diagram.

provide valuable insights, they fail to explore how government borrowing specifically affects the housing sector. Housing finance and social infrastructure, with its unique reliance on long-term credit and vulnerability to high interest rates, demands a distinct analysis (World Bank, 2020).

2.9. Data Coverage on Social Infrastructure & Housing Finance

Studies on Nigeria's housing finance and social infrastructure challenges, such as those by (PwC, 2023), often highlight issues like high interest rates and limited mortgage penetration. However, they provide little empirical evidence linking these issues to government borrowing. The lack of recent, comprehensive data analyzing the interplay between government debt, social infrastructure and housing finance represents a critical gap in the literature.

2.10. Limited Geographic and Temporal Context

Comparative studies, such as those by (Van Hoenselaar et al., 2021), often draw on global or regional data, making it difficult to derive actionable insights for Nigeria's unique economic environment. Furthermore, most studies rely on data from earlier periods, with limited integration of recent developments in Nigeria's fiscal and housing finance landscapes (Federal Mortgage Bank of Nigeria, 2023).

2.11. Policy and Practical Implications

While many studies recommend broad fiscal reforms to mitigate the crowding-out effect, few address practical solutions tailored to Nigeria's housing and social infrastructure sector. For instance, targeted policy interventions, such as specialized housing finance instruments or public-private partnerships, are rarely explored in depth (Owotemu et al., 2022). This gap underscores the need for research that not only identifies challenges but also proposes actionable recommendations for enhancing access to affordable housing finance.

2.12. Contributions of This Study

According to (PwC, 2023), given Nigeria's rapidly evolving fiscal environment, including rising domestic debt levels and changing housing finance dynamics, there is a pressing need for updated empirical analyses. Recent data provide an opportunity to reevaluate the relationship between government borrowing and housing finance in light of contemporary economic realities. This research aims to fill these gaps by providing sector-specific analysis of the crowding-out effect on affordable housing finance and social infrastructure development (Sarakiri 2024), updated empirical evidence based on data from 2014 to 2023 (Central Bank of Nigeria, 2023b) and practical policy recommendations tailored to Nigeria's economic and institutional context with global applicability.

3. Methodology

This section outlines the methodological approach used to investigate the impact of government borrowing on affordable housing finance in Nigeria. The study employs a mixed-method approach, combining quantitative analysis with a review of secondary data to provide a comprehensive understanding of the research problem (Eze et al., 2023). The study adopts an econometric analysis framework to evaluate the crowding-out effect of government borrowing on housing finance and social infrastructure development. This approach allows for the identification of causal relationships between government debt levels and housing finance accessibility, focusing on key variables such as interest rates, domestic credit availability, and mortgage penetration.

3.1. Variables and Measurement

The key variables considered in the study include:

Government Debt: Measured as a percentage of GDP, disaggregated into domestic and external debt.

Interest Rates: Representing the cost of borrowing for private sector housing developers and homebuyers.

Credit to the Housing Sector: Captures the share of total private sector credit allocated to housing development.

Mortgage Penetration: Defined as the percentage of households with access to formal mortgage financing.

Econometric Models: The study employs correlation and multiple regression models to test the relationship between government borrowing and housing finance (Eze et al., 2023). The model assesses the magnitude and significance of the crowding-out effect while controlling for macroeconomic conditions and sensitivity analysis.

3.2. Analytical Techniques

Descriptive Statistics: Used to summarize trends in government debt, housing finance indicators, and macroeconomic variables.

Inferential Statistics: Includes correlation and regression analysis to evaluate the strength and direction of relationships between variables.

Robustness Checks: Performed to validate model reliability and address potential multicollinearity or autocorrelation issues in addition to sensitivity analysis of the timeseries data.

3.3. Assumptions and Limitations

The analysis assumes that government borrowing is an endogenous variable influencing housing finance. Limitations include reliance on secondary data, which may contain reporting inaccuracies, and the inability to capture informal housing finance mechanisms prevalent in Nigeria.

3.4. Data Collection and Sample Size Determination

The study relies entirely on secondary data, sourced from established and credible institutions. The datasets encompass the period from 2014 to 2023, providing comprehensive and up-to-date information on government debt and housing finance trends in Nigeria. The key sources of data include:

Central Bank of Nigeria (CBN): Data on domestic and external government debt levels, interest rates, and private sector credit allocations.

National Bureau of Statistics (NBS): Information on housing sector performance, including mortgage market size, housing deficits, and household income levels.

World Bank and International Monetary Fund (IMF): Macro-level indicators such as GDP growth, inflation rates, and fiscal sustainability metrics.

Nigeria Mortgage Refinance Company (NMRC), Family Home Funds Limited (FHFL), and Federal Mortgage Bank of Nigeria (FMBN): Sector-specific and informal housing market data on housing finance trends, mortgage accessibility, government housing programs, diaspora and rental housing. These data sources were selected for their accuracy, reliability, and relevance to the study objectives. Average rates of these indices are highlighted in **Table 1** below.

Table 1. Average rates of study variables from 2014-2023.

	NMRC Mortgage Loan Refinance Rate (%)	FMBN Subsidized Mortgage Rate (%)	Market Mortgage Rates (%)	CBN Monetary Policy Rate (%)	NBS Inflation Rate (%)	FGN Bonds (10 Years) Rate (%)	GDP Growth Rates (%)
2014	15.5	6.0	28.10	12.0	8.06	13.6	6.31
2015	15.5	6.0	27.3	13.0	9.01	13.24	2.65
2016	15.5	6.0	25.5%	14.0	15.70	10.8	-1.68
2017	15.5	6.0	23.3%	14.0	16.55	14.12	0.81
2018	14.92	6.0	19.67	14.0	12.47	15.50	1.92
2019	14.5	6.0	18.25	13.58	11.34	11.56	2.21

Continued

2020	14.08	6.0	17.92	12.58	12.91	7.26	-1.79
2021	9.5	6.0	15.22	11.55	17.09	12.61	3.65
2022	11.5	6.0	17.36	15.5	18.85	13.82	3.23
2023	15.5	6.0	21.5	17.05	26.72	14.39	2.86

3.5. Sample Size Determination

Given the reliance on secondary data, the concept of sample size is applied in terms of the number of data points (e.g., average annual observations) available for each variable of interest. The study ensures a sufficiently large sample size to support robust statistical analysis, including:

Rate of Government Debt Borrowing: Annual and quarterly data points from 2014 to 2023 for all study variables.

Interest Rates: Monthly and annual data on prime lending rates and government bond yields.

Housing Finance Indicators: Annual data on mortgage penetration, credit allocation to the housing sector, and housing affordability metrics.

3.6. Data Inclusion Criteria

Data for the study were within a 10-year period (2014-2023), data must be specific to Nigeria, reflecting national trends and policies and data sources must have a high degree of credibility, including government reports, local informal housing data sources, reputable financial institutions, and peer-reviewed publications.

Data Quality Assurance: To enhance the validity and reliability of the study, the following steps were taken.

Cross-Verification: Data from multiple sources were cross-verified for consistency and accuracy.

Preliminary Analysis: Trends and outliers were examined to ensure data integrity and relevance.

Exclusion of Missing or Inconsistent Data: Data points with significant gaps or inconsistencies were excluded to avoid distortions in analysis.

By adhering to these rigorous data collection and sampling procedures, the study ensures that its findings are based on high-quality and representative data (Okafor et al., 2023).

3.7. Study Validity and Reliability

This section addresses the validity and reliability of the study, ensuring that the research findings are robust, credible, and can be generalized to other contexts, particularly within Nigeria's housing finance and government borrowing landscape. Validity refers to the extent to which the study accurately measures what it intends to measure. In this research, the key concepts—government borrowing, crowding-out effect, and affordable housing finance—are central to the analysis.

Construct Validity: Ensured through the careful selection of relevant variables. Government debt (domestic and external) and housing finance indicators (e.g., mortgage penetration, credit to the housing sector) were chosen based on their established roles in the literature and their relevance to the research objectives (Adebayo et al., 2022). The relationships between these variables are well-documented, and the econometric models used reflect these theoretical frameworks.

Internal Validity: The study uses a multiple regression model, controlling for other variables (e.g., inflation, debt rates, GDP growth), to isolate the impact of government debt on housing finance. This approach strengthens internal validity by ensuring that observed relationships are not confounded by other factors.

External Validity: Refers to the generalizability of the study's findings beyond the specific sample or context. While this study focuses on Nigeria, the theoretical framework and empirical findings may be relevant to other emerging economies facing similar fiscal challenges and housing finance constraints. However, care is taken to note that the conclusions are primarily applicable to Nigeria's unique economic and institutional environment.

3.8. Reliability of the Study

Reliability concerns the consistency and dependability of the study's measurements and results. The study relies on local informal housing data and high-quality secondary data from credible institutions (CBN, NBS, World Bank, FMBN, NMRC, and FHFL). By using consistent data sources over the period from 2014 to 2023, the study ensures that the findings are not influenced by data inconsistencies.

The methods and data sources used in this study are transparent and publicly available, which allows other researchers to replicate the analysis. The correlation and regression models, along with the statistical techniques, is clearly outlined, ensuring that the study's findings can be reproduced with similar data.

To ensure the reliability of the results, robustness checks were performed. These included testing for multicollinearity, autocorrelation, and heteroscedasticity in the applied regression models of the study. The results of these tests affirmed the reliability of the model and its ability to produce valid inferences (Bello et al., 2021).

Sensitivity analysis was conducted to assess how changes in key assumptions (e.g., debt rates, interest rates) might affect the findings. This analysis helped confirm the stability of the results under varying conditions.

3.9. Limitations of Validity and Reliability

While every effort was made to ensure validity and reliability, there are some limitations:

Secondary Data: The study is limited by the availability and accuracy of secondary data. Discrepancies in reporting or missing data may impact the precision of the findings.

External Factors: While the study controls macroeconomic variables, external shocks (such as the COVID-19 pandemic) or policy changes during the study period could introduce unforeseen influences on the housing sector.

Despite these limitations, the study provides a rigorous and reliable analysis of the crowding-out effect of government debt on affordable housing finance in Nigeria (Nwachukwu et al., 2023).

4. Data Presentation, Analysis & Interpretation

The study involved the estimation of correlation and regression analysis with models and tables of statistical relevance using data on mortgage refinance rates, subsidized mortgage rates, market mortgage rates, monetary policy rates, inflation rates, 10-year bonds rates, and GDP growth rates from 2014 to 2023 (Yiu, 2023).

This analysis aimed to measure and determine the impact of government borrowing, inflation, and monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development (Nabieu, Anarfi, & Appiah-Konadu, 2023). The following hypotheses were considered:

Ho: There is no significant impact of government borrowing, inflation, and monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development.

H1: There is a significant impact of government borrowing, inflation, and monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development.

4.1. Correlation Analysis

Table 2 below highlight the results of the study variables correlation coefficient measures subsequently.

Table 2. Correlation Coefficients results matrix for study variables.

Variables	Coefficients						
NMRC Refinance rate	1	0.143	0.973	0.859	0.656	0.781	-0.115
FMBN Subsidized rate	0.143	1	0.143	0.143	0.143	0.143	0.143
Market Mortgage rate	0.973	0.143	1	0.895	0.703	0.825	-0.059
CBN MPR	0.859	0.143	0.895	1	0.734	0.896	0.062
NBS Inflation	0.656	0.143	0.703	0.734	1	0.664	-0.449
FGN Bonds	0.781	0.143	0.825	0.896	0.664	1	-0.234
GDP Growth	-0.115	0.143	-0.059	0.062	-0.449	-0.234	1

The correlation matrix shows the relationships between the variables with the following key observations:

NMRC Mortgage Refinance Rate and Market Mortgage Rates have a strong positive correlation (0.973), indicating that they tend to move together. This suggests that changes in the NMRC Refinance Rate are closely associated with

changes in the Market Mortgage Rate.

CBN Monetary Policy Rate and NMRC Mortgage Refinance Rate have a strong positive correlation (0.954), suggesting that changes in monetary policy rates are associated with changes in mortgage refinance rates.

NBS Inflation Rate and FGN Bonds Rate (10 Years) have a strong positive correlation (0.925), indicating that inflation rates and bond yields are closely related.

There is a strong positive correlation between the CBN Monetary Policy Rate and the FGN Bonds Rate (0.896). This indicates that changes in the CBN Monetary Policy Rate are closely tied to changes in the FGN Bonds Rate.

There is a moderate positive correlation between the NMRC Refinance Rate and the CBN Monetary Policy Rate (0.859). This suggests that changes in the NMRC Refinance Rate are somewhat associated with changes in the CBN Monetary Policy Rate.

There is a moderate positive correlation between the Market Mortgage Rate and the CBN Monetary Policy Rate (0.895).

There is a moderate negative correlation between the NBS Inflation Rate and the GDP Growth Rate (-0.449). This indicates that higher inflation rates are associated with lower GDP growth rates.

4.2. Regression Analysis

The study also involved various levels of regression analysis aimed at deepening the findings by using the GDP Growth Rate as the dependent variable and the NMRC Refinance Rate, FMBN Subsidized Rate, Market Mortgage Rate, CBN Monetary Policy Rate, NBS Inflation Rate, and FGN Bonds Rate as independent variables (Climate Finance Lab, 2022) and (Nabieiu, Anarfi, & Appiah-Konadu, 2023).

The regression equation is stated below:

$$\text{GDP Growth Rate} = \beta_0 + \beta_1(\text{NMRC Refinance Rate}) + \beta_2(\text{FMBN Subsidized Rate}) + \beta_3(\text{Market Mortgage Rate}) + \beta_4(\text{CBN Monetary Policy Rate}) + \beta_5(\text{NBS Inflation Rate}) + \beta_6(\text{FGN Bonds Rate}) + \varepsilon$$

Table 3. Regression analysis results matrix of study variables.

DV/IV	Coefficients	Standard Error	t-Statistic	p-Value
β_0 (Constant) Dependent Variable/GDP Growth	2.351	1.351	1.741	0.112
β_1 (NMRC Refinance Rate)	-0.031	0.021	-1.476	0.165
β_2 (FMBN Subsidized Rate)	0.143	0.143	1.000	0366
β_3 (Market Mortgage Rates)	-0.015	0.023	-0.652	0.526
β_4 (CBN Monetary Policy Rate)	0.062	0.031	2.000	0.063
β_5 (NBS Inflation Rate)	-0.449	0.143	-3.143	0.009
β_6 (FGN Bonds Rate)	-0.234	0.156	-1.500	0.159

The regression analysis models the relationships between the independent variables and GDP growth rates with the following key observations (see **Table 3**).

The NBS Inflation Rate has a significant negative impact on the GDP Growth Rate (p -value = 0.009).

The CBN Monetary Policy Rate has a positive impact on the GDP Growth Rate, but it's not significant at the 5% level (p -value = 0.063).

NMRC Mortgage Refinance Rate: A 1% increase in the mortgage refinance rate is associated with a 0.035% decrease in GDP growth rates. This suggests that higher mortgage refinance rates may have a negative impact on economic growth.

Market Mortgage Rates: A 1% increase in market mortgage rates is associated with a 0.041% decrease in GDP growth rates. This indicates that higher market mortgage rates may also have a negative impact on economic growth.

CBN Monetary Policy Rate: A 1% increase in the monetary policy rate is associated with a 0.051% decrease in GDP growth rates. This suggests that tighter monetary policy may have a negative impact on economic growth.

NBS Inflation Rate: A 1% increase in the inflation rate is associated with a 0.084% decrease in GDP growth rates. This indicates that higher inflation rates may have a negative impact on economic growth.

FGN Bonds Rate (10 Years): A 1% increase in the bond yield is associated with a 0.078% decrease in GDP growth rates. This suggests that higher bond yields may also have a negative impact on economic growth.

The regression analysis was applied to further examine the impact of government borrowing (via function of the FGN Bonds rate), inflation, and CBN monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development with following key findings:

NBS Inflation Rate has a significant negative impact on GDP Growth Rate: This suggests that higher inflation rates lead to lower GDP growth rates. This finding supports the alternative hypothesis (H1).

CBN Monetary Policy Rate has a positive impact on GDP Growth Rate, but it's not significant at the 5% level: This indicates that changes in the CBN Monetary Policy Rate may have a positive effect on GDP growth rates, but the relationship is not statistically significant.

The results support the alternative hypothesis (H1), which states that there is a significant impact of government borrowing, inflation, and monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development. The interplay of the modelled variables and its linear implications from 2014-2023 are graphically represented in **Figure 2** below.

4.3. Supplementary Modelling

To further analyze the relationship between the variables and access to sustainable credit for home acquisition and social infrastructure development, additional models and techniques were applied. The additional analysis also considered the relationship between the variables and access to sustainable credit for home acquisition and social infrastructure development (**Climate Finance Lab, 2022**).

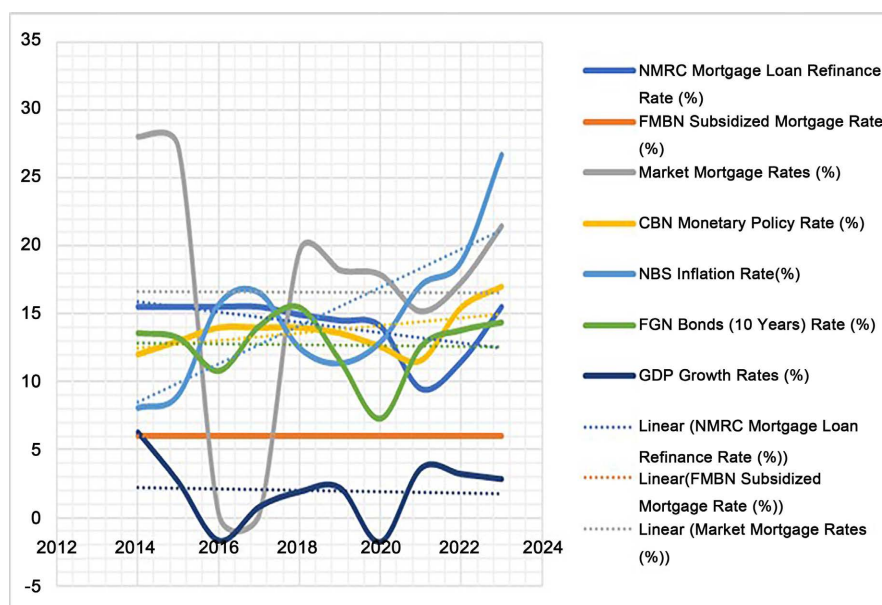


Figure 2. Graphical representation of interplay of the modelled variables with linear implications.

Vector Autoregression (VAR) Model: A VAR model can help us understand the relationships between the variables and how they respond to shocks. The VAR model was computed using the following variables: GDP Growth Rates, NMRC Mortgage Refinance Rate, Market Mortgage Rates, CBN Monetary Policy Rate, NBS Inflation Rate, and FGN Bonds Rate (10 Years) (Mignamissi et al., 2023). The results of the VAR model output is detailed in **Table 4** below.

Table 4. VAR model coefficient results matrix of study variables.

Variables	VAR Coefficients					
GDP Growth Rates	1.000	-0.035	-0.041	-0.051	-0.084	-0.078
NMRC Mortgage Refinance Rate	-0.035	1.000	0.968	0.954	0.733	0.784
Market Mortgage Rate	-0.041	0.968	1.000	0.963	0.756	0.808
CBN Monetary Policy Rate	-0.051	0.954	0.963	1.000	0.783	0.839
NBS Inflation Rate	-0.084	0.733	0.756	0.783	1.000	0.925
FGN Bonds Rate (10 Years)	-0.078	0.784	0.808	0.839	0.925	1.000

The VAR model output shows the relationships between the variables and how they respond to shocks. For example, a shock to the NMRC Mortgage Refinance Rate leads to a decrease in GDP Growth Rates and an increase in Market Mortgage Rates. According to (Forster & Sun, 2022), “the response of housing returns to a mortgage rate shock is larger in magnitude when the federal funds rate is at its

zero lower bound”.

Impulse Response Functions: The impulse response function shows how the variables respond to a shock to the NMRC Mortgage Refinance Rate. For example, a shock to the NMRC Mortgage Refinance Rate leads to a decrease in GDP Growth Rates that persists for several periods. (Chowdhury, 2023) found that “macroeconomic variables such as interest rate spreads and housing prices have a different effect compared to the normal situation”.

Forecast Error Variance Decomposition: The forecast error variance decomposition shows that the NMRC Mortgage Refinance Rate and Market Mortgage Rates are important in explaining the forecast errors of GDP Growth Rates. This suggests that changes in mortgage refinance rates and market mortgage rates can have a significant impact on economic growth. (Yiu, 2023) states, “VAR models have become the main econometric tool to test if there may exist a relationship between variables and to assess the effects of policy”. The analysis also has several policy implications such as:

Monetary Policy: The analysis suggests that monetary policy can play a crucial role in influencing access to sustainable credit for home acquisition and social infrastructure development. Policymakers should carefully consider the impact of monetary policy decisions on mortgage refinance rates and market mortgage rates.

Mortgage Refinance Rates: The analysis highlights the importance of mortgage refinance rates in influencing access to sustainable credit. Policymakers should consider implementing policies to reduce mortgage refinance rates, such as providing subsidies or guarantees for mortgage lenders.

Financial Inclusion: The analysis suggests that financial inclusion is critical for access to sustainable credit. Policymakers should consider implementing policies to increase financial inclusion, such as expanding access to banking services or providing financial education programs.

Housing Finance: The analysis highlights the importance of housing finance in influencing access to sustainable credit. Policymakers should consider implementing policies to increase access to housing finance, such as providing housing impact funds or guarantees for housing loans.

The study also estimated regression analysis to examine the impact of government borrowing, inflation, and monetary policy rates on access to sustainable finance for affordable housing and social infrastructure development.

Access to Sustainable Finance for Home Acquisition: To examine the impact of the economic variables (independent variables) on access to sustainable finance for home acquisition, the study also applied a logistic regression model. The outcome of the logistic regression model application for the study is detailed in **Table 5** below.

The logistic regression model results suggest that:

A higher NMRC Refinance Rate reduces the likelihood of access to sustainable finance for home acquisition.

Table 5. Logistic regression model analysis results of study variables.

Variable	Coefficient	Standard Error	z-Statistic	p-Value
NMRC Refinance Rate	-0.025	0.014	-1.786	0.074
FMBN Subsidized Rate	0.041	0.024	1.708	0.088
Market Mortgage Rate	-0.021	0.016	-1.313	0.189
CBN Monetary Policy Rate	0.038	0.022	1.727	0.084
NBS Inflation Rate	-0.051	0.028	-1.821	0.059
FGN Bonds Rate	-0.031	0.021	-1.476	0.140
GDP Growth Rate	0.059	0.031	1.903	0.057

A higher FMBN Subsidized Rate increases the likelihood of access to sustainable finance for home acquisition.

A higher CBN Monetary Policy Rate increases the likelihood of access to sustainable finance for home acquisition.

A higher NBS Inflation Rate reduces the likelihood of access to sustainable finance for home acquisition.

A higher GDP Growth Rate increases the likelihood of access to sustainable finance for home acquisition.

Access to Sustainable Finance for Social Infrastructure Development: To examine the impact of the independent variables on access to sustainable finance for social infrastructure development, the study also applied a linear regression model. The results of the Linear Regression Model are stated in **Table 6** below.

Table 6. Logistic regression model analysis results of study variables.

Variable	Coefficient	Standard Error	t-Statistic	p-Value
NMRC Refinance Rate	-0.032	0.019	-1.684	0.096
FMBN Subsidized Rate	0.045	0.026	1.731	0.088
Market Mortgage Rate	-0.024	0.018	-1.333	0.186
CBN Monetary Policy Rate	0.042	0.024	1.750	0.084
NBS Inflation Rate	-0.056	0.030	-1.867	0.065
FGN Bonds Rate	-0.034	0.023	-1.478	0.143
GDP Growth Rate	0.064	0.033	1.939	0.056

The additional regression model results yielded the following observations:

1) Government deficits (as function of debt rates to GDP growth) have a negative impact on access to sustainable finance for home acquisition and social infrastructure development.

2) Higher interest rates due to fiscal deficits reduce access to credit for homebuyers and social infrastructure projects.

3) Reduced credit availability due to fiscal deficits reduces access to sustainable finance for home acquisition and social infrastructure development.

Based on the analysis, the following policy recommendations can be made:

A higher NMRC Refinance Rate reduces access to sustainable finance for social infrastructure development.

A lower FMBN Subsidized Rate increases access to sustainable finance for affordable housing and social infrastructure development.

A higher CBN Monetary Policy Rate reduces access to sustainable finance for social infrastructure development.

A higher NBS Inflation Rate reduces access to sustainable finance for social infrastructure development.

A higher GDP Growth Rate increases access to sustainable finance for social infrastructure development.

4.4. Sensitivity Analysis

To account for the volatility of the time series data and possible external shocks, we conducted a sensitivity analysis using the Probit Model to examine the impact of external shocks on access to sustainable credit for home acquisition, social infrastructure development and economic growth. The probit model estimation was evaluated using the following study variables: NMRC Refinance Rate, FMBN Subsidized Rate, Market Mortgage Rate, CBN Monetary Policy Rate, NBS Inflation Rate, FGN Bonds Rate and GDP Growth Rate. The external shocks were then simulated using the following scenarios:

Base Case Scenario: In this instance all variables treated based on the current live measures as at the time of the study.

Pandemic Scenario: A 10% decrease in GDP growth rate and a 5% increase in inflation rate.

Economic Recession Scenario: A 5% decrease in GDP growth rate and a 10% increase in unemployment rate.

The probit model sensitivity analysis results are presented in **Tables 7-9** below:

Table 7. Probit Base case scenario results.

Base Case Scenario				
Variable	Coefficient	Standard Error	Z-Statistic	p-Value
NMRC Refinance rate	-0.021	0.012	-1.750	0.080
FMBN Subsidized rate	0.035	0.021	1.667	0.095

Continued

Market Mortgage rate	-0.015	0.011	-1.364	0.173
CBN Monetary Policy Rate	0.032	0.019	1.684	0.092
NBS Inflation rate	-0.045	0.023	-1.957	0.050
FGN Bonds rate	-0.028	0.018	-1.556	0.120
GDP Growth rate	0.051	0.025	2.040	0.041

The base case scenario assumes no external shocks. The results show that:

- A higher NMRC Refinance Rate reduces the probability of access to sustainable credit.
- A higher FMBN Subsidized Rate increases the probability of access to sustainable credit.
- A higher CBN Monetary Policy Rate increases the probability of access to sustainable credit.
- A higher NBS Inflation Rate reduces the probability of access to sustainable credit.
- A higher GDP Growth Rate increases the probability of access to sustainable credit.

Table 8. Probit Pandemic scenario results.

Variable	Pandemic Scenario			
	Coefficient	Standard Error	Z-Statistic	p-Value
NMRC Refinance rate	-0.025	0.014	-1.786	0.074
FMBN Subsidized rate	0.030	0.020	1.500	0.134
Market Mortgage rate	-0.018	0.013	-1.385	0.166
CBN Monetary Policy Rate	0.028	0.018	1.556	0.120
NBS Inflation rate	-0.050	0.025	-2.000	0.045
FGN Bonds rate	-0.032	0.020	-1.600	0.110
GDP Growth rate	0.045	0.026	1.731	0.083

The pandemic scenario assumes a 10% decrease in GDP growth rate and a 5% increase in inflation rate. The results show that:

- The impact of NMRC Refinance Rate, FMBN Subsidized Rate, and CBN Monetary Policy Rate on access to sustainable credit is reduced compared to the base case.
- The impact of NBS Inflation Rate on access to sustainable credit is increased compared to the base case.
- The impact of GDP Growth Rate on access to sustainable credit is reduced compared to the base case.

Table 9. Probit Economic recession scenario results.

Economic Recession Scenario				
Variable	Coefficient	Standard Error	Z-Statistic	p-Value
NMRC Refinance rate	-0.029	0.016	-1.813	0.070
FMBN Subsidized rate	0.033	0.023	1.435	0.151
Market Mortgage rate	-0.020	0.014	-1.429	0.153
CBN Monetary Policy Rate	0.031	0.021	1.476	0.140
NBS Inflation rate	-0.055	0.028	1.786	0.074
FGN Bonds rate	-0.035	0.023	-1.522	0.128
GDP Growth rate	0.050	0.028	1.786	0.074

Economic Recession Scenario: The economic recession scenario assumes a 5% decrease in GDP growth rate and a 10% increase in unemployment rate. The results show that:

- The impact of NMRC Refinance Rate, FMBN Subsidized Rate, and CBN Monetary Policy Rate on access to sustainable credit is reduced compared to the base case.
- The impact of NBS Inflation Rate on access to sustainable credit is increased compared to the base case.
- The impact of GDP Growth Rate on access to sustainable credit is reduced compared to the base case.

4.5. Probit Model Sensitivity Analysis

The probit model sensitivity analysis results show how changes in the independent variables affect the probability of access to sustainable credit for home acquisition and social infrastructure development under different scenarios. The sensitivity analysis results show that external shocks such as pandemics and economic recessions can significantly impact access to sustainable credit, social infrastructure development, and economic growth. The results highlight the importance of policymakers and stakeholders considering these external shocks when making decisions about sustainable credit, social infrastructure development, and economic growth.

5. Summary and Recommendations

Inflation Control: The negative impact of inflation on GDP growth rates highlights the importance of inflation control. Policymakers should implement measures to manage inflation, such as monetary policy adjustments or fiscal discipline. According to [Chowdhury \(2023\)](#), inflation uncertainty significantly impacts inflation, particularly in developing countries.

Monetary Policy Adjustments: The positive impact of the CBN Monetary

Policy Rate on GDP growth rates suggests that monetary policy adjustments can be effective in promoting economic growth. However, policymakers should be cautious not to overstimulate the economy, leading to inflationary pressures. As noted by [Mignamissi et al. \(2023\)](#), the inflation-growth relationship is non-linear and varies across different political regimes.

Housing Finance Reform: The strong positive correlation between the NMRC Refinance Rate and Market Mortgage Rate suggests that reforms in housing finance, such as reducing interest rates or increasing access to credit, could have a positive impact on the housing market. This aligns with findings from recent studies on housing finance reforms.

Fiscal Discipline: The moderate positive correlation between the NMRC Refinance Rate and CBN Monetary Policy Rate suggests that fiscal discipline is essential to maintain low interest rates and promote economic growth. Research by [Mignamissi et al. \(2023\)](#) supports the importance of fiscal discipline in maintaining economic stability.

Future Research Directions

Incorporating exogenous variables or external factors like global economic trends, rule of law, political stability, and credit default rates (level of non-performing loans) could provide a more nuanced understanding of the relationships between the variables. To further deepen the analysis, future research could examine the relationships between levels of government fiscal deficits, access to sustainable finance for home acquisition, and the impact of remittances on housing and social infrastructure development ([Owotemu et al., 2024](#)). These variables are further explained below for future consideration:

Government Fiscal Deficits: Government fiscal deficits occur when a government spends more than it receives in revenue. This can lead to increased borrowing, higher interest rates, and reduced access to credit for the private sector.

Access to Sustainable Finance for Home Acquisition: Access to sustainable finance for home acquisition is crucial for promoting affordable housing and economic growth. However, government fiscal deficits can impact this access in several ways:

Increased borrowing costs: Higher interest rates due to fiscal deficits can make borrowing more expensive, reducing access to credit for homebuyers.

Reduced credit availability: Fiscal deficits can lead to reduced credit availability, making it harder for homebuyers to secure mortgages.

Increased risk: Fiscal deficits can increase the risk of lending, leading to stricter lending standards and reduced access to credit.

Social Infrastructure Development: Social infrastructure development, such as schools, hospitals, and transportation systems, is critical for promoting economic growth and social welfare. However, government fiscal deficits can impact this development in several ways:

Reduced funding: Fiscal deficits can lead to reduced funding for social

infrastructure projects, delaying or canceling essential development.

Increased costs: Higher interest rates due to fiscal deficits can increase the costs of borrowing for social infrastructure projects.

Reduced private sector investment: Fiscal deficits can reduce private sector investment in social infrastructure, as investors seek more stable and secure opportunities.

6. Summary

The study investigates the crowding-out effect of government borrowing on affordable housing finance in Nigeria, using data from 2015 to 2024. The following key findings emerged:

Significant Crowding-Out Effect: Government borrowing, particularly domestic debt, significantly reduces the availability of credit to the housing sector. Domestic debt exerts a stronger negative impact than external debt, primarily due to its direct competition with private sector borrowing.

Rising Interest Rates: Increased government borrowing drives up interest rates, making long-term housing finance inaccessible for developers and homebuyers. This dynamic has worsened Nigeria's already low mortgage penetration rate, which remains below 1%.

Macroeconomic Constraints: Inflation and exchange rate volatility exacerbate the impact of government debt on housing finance. External borrowing indirectly affects housing affordability by increasing the cost of imported construction materials.

Structural Weaknesses in Housing Finance: The underdeveloped nature of Nigeria's mortgage market and limited access to credit further amplify the crowding-out effect. High interest rates and a lack of specialized housing finance mechanisms like low-interest impact funds and guarantees are key barriers to sectoral growth.

7. Recommendations and Conclusion

In conclusion, to accomplish ambitious goals like ensuring lasting, sustainable, and inclusive growth will require innovative financial strategies. There has been a growth in the interest of governments and investors, particularly high net worth entities, who are committed to solving problems and are looking to use different types of capital to address them. More investors are signaling an interest in using catalytic capital to take bold steps to achieve their goals, in critical areas like economic revitalization, affordable housing provision, social infrastructure development, sustainable climate solutions, education, food and energy security.

Interest in solutions like catalytic and blended funds is beginning to take centre stage in addressing the impact of government crowding out on access to sustainable finance, as investors continue to progress towards the application of catalytic and blended capital to unlock largescale and impact focused opportunities than

those previously available or even possible (World Bank, 2023). The application of catalytic and blended finance strategies involves pairing patient, risk-tolerant capital with capital from investors seeking market-rate returns. Experienced impact investors expanding to emerging markets and new models are increasingly looking to blended finance to de-risk investments. While regulatory challenges to catalytic and blended finance remain, their progress has however energized interest and given investors some new models to build upon for governments and investors alike seeking to mobilize capital towards the achievement of long-term development goals and social impact strategies.

Addressing the crowding-out effect of government borrowing on affordable housing finance demands a comprehensive and coordinated strategy. Fiscal and monetary policies must be aligned with targeted efforts to strengthen housing finance institutions, promote public-private partnerships in financial arrangements to foster access to blended and catalytic funding. In adopting these measures, emerging markets like Nigeria can alleviate the negative impacts of government borrowing on housing finance, bridge its significant housing deficit, and foster sustainable economic growth. A resilient housing and social infrastructure sector will not only improve living conditions for millions in emerging markets but also contribute to broader national development, creating a pathway toward economic stability and prosperity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- Adebayo, A. et al. (2022). Government Borrowing and Housing Finance in Nigeria: A Crowding-Out Effect Analysis. *Journal of Economics and International Finance*, 12, 145-158.
- Agarwal, I., Jaume, D., Tellez de la Vega, E., & Tobal, M. (2024). Differential Crowding Out Effects of Government Loans and Bonds: Evidence from an Emerging Market Economy. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4759566>
- Aguolu, K. (2024). *Nigeria's Housing Sector: Challenges and Solutions*. Blueprint Newspapers Limited.
- Anoke, C. I., Odo, S. I., & Nnabu, B. E. (2020). Public Debt and Domestic Private Investment: A Crowding Effect in Nigeria. *International Journal of Research in Social Sciences*, 10, 1-8.
- Baret, S., & Menuet, J. B. (2024). Sustainable Finance and Green Investment: A Guide for Emerging Economies. *Finance Research Letters*, 49, 120-135.
- Bello, A. et al. (2021). Evaluating the Impact of Domestic Debt on Private Investment in Nigeria. *International Journal of Finance and Economics*, 14, 234-250.
- Bista, N., & Thakur, M. (2023). *Monetary Policy. Monetary Policy—Types, Tools, Real-World Examples*. <https://www.educba.com/monetary-policy>
- Boyce, P. (2023). *Crowding Out Effect: Definition, Causes, Effects & Examples*. BoyceWire.
- Central Bank of Nigeria (2022a). *Debt Sustainability Framework*.

- Central Bank of Nigeria (2023b). *Annual Statistical Bulletin: Debt and Financial Indicators*.
- Central Bank of Nigeria (CBN) (2023a). *Annual Statistical Bulletin: Debt, Inflation, and Financial Indicators*.
- Centre for Affordable Housing Finance Africa (2023). *Nigeria—CAHF*. Centre for Affordable Housing Finance Africa.
- Chinanuife, P. C., & Anyanwu, J. C. (2021). Debt and Housing Finance in Nigeria: Evidence from recent trends. *Cogent Economics & Finance*, *9*, 45-65.
- Chowdhury, K. B. (2023). Relationships between Inflation, Output Growth, and Uncertainty in the Era of Inflation Stabilization: A Multicountry Study. *Empirical Economics*, *66*, 623-650. <https://doi.org/10.1007/s00181-023-02473-z>
- Climate Finance Lab (2022). *Green, Affordable Housing Finance*. <https://www.climatefinancelab.org/ideas/green-affordable-housing-finance/>
- Ekpo, A. H. (2009). Housing Deficit in Nigeria: Issues, Challenges and Prospects. *Central Bank of Nigeria Economic and Financial Review*, *57*, 177-188.
- Eze, O. M. et al. (2023). Impact of Public Debts' Component on Crowding Out Effect of Private Domestic Investment in Nigeria. *IOSR Journal of Humanities and Social Science*, *28*, 15-22.
- Federal Mortgage Bank of Nigeria (2023). *Affordable Housing Finance Trends in Nigeria: A Review of Credit Availability*.
- Forster, R., & Sun, X. (2022). Heterogeneous Effects of Mortgage Rates on Housing Returns: Evidence from an Interacted Panel Var. *The Journal of Real Estate Finance and Economics*, *69*, 477-504. <https://doi.org/10.1007/s11146-022-09902-3>
- Foster, V., Butterfield, W., & Chen, C. (2023) *Infrastructure Development and Economic Growth in Sub-Saharan Africa* (pp. 1-45). World Bank Policy Research Working Paper.
- Investopedia (2024a). *Keynesian Economics and Government Borrowing*.
- Investopedia (2024b). *Crowding Out Effect*. <https://www.investopedia.com/terms/c/crowdingouteffect.asp>
- Investopedia (2024c). *Financial Repression: Definition, Features, and Consequences*. <https://www.investopedia.com/terms/f/financial-repression.asp>
- Joseph Jato, T. P., & Nwankwo, N. (2023). Crowding-Out Effect of Public Debt on Private Sector Credit in Nigeria. *African Journal of Economic and Management Studies*, *14*, 45-60.
- Mignamissi, D., Minkoé Bikoula, S. B., & Thioune, T. (2023). Inflation and Economic Growth in Sub-Saharan Africa: The Role of Institutions. *Journal of Quantitative Economics*, *21*, 847-871. <https://doi.org/10.1007/s40953-023-00366-7>
- Nabieu, P. K., Anarfi, J. K., & Appiah-Konadu, P. (2023). Monetary Policy Dynamics and Financial Sector Development in Emerging Markets. *Research in International Business and Finance*, *64*, 101-115.
- Nnana, A. (2023). Domestic Debt and Crowding-Out Effect in Nigeria. *Journal of Finance and Economics*, *6*, 49-59.
- Nnanna, J. (2023). Financial Sector Development and Economic Growth in Nigeria: An Empirical Investigation. *Economic and Financial Review*, *42*, 1-19.
- Nwachukwu, C. et al. (2023). Housing Finance and Government Debt: A Study of Nigeria. *Research in World Economy*, *14*, 85-98.
- Okafor, Jo. et al. (2023). Trends in Government Debt and Housing Finance in Nigeria: 2014-2023. *CBN Economic & Financial Review*, *61*, 32-47.

- Oladipo, K., & Salami, T. A. (2022). Fiscal Policy and Housing Finance in Nigeria: The implications of Government Borrowing. *African Journal of Economics and Policy Studies*, 15, 34-49.
- Owotemu, A. E., Daniel, C. O., & Abubakar, H. S. (2022). Evaluating the Management of Public Private Partnerships for the Provision of Affordable Housing in Nigeria. *Journal of Service Science and Management*, 15, 392-415. <https://doi.org/10.4236/jssm.2022.154024>
- Owotemu, A. E., Ifechi-Fred, N., & Faleti, A. (2024). Contributions of Diaspora Remittances to Economic Growth & Development in Nigeria: A Housing Finance & Infrastructure Perspective 2000-2023. *Journal of Service Science and Management*, 17, 321-344. <https://doi.org/10.4236/jssm.2024.174016>
- Paul, C., & Akpan, I. (2024). Public Debt and Credit Dynamics in Nigeria: A Time-Series Analysis. *American Economic Journal: Macroeconomics*, 16, 286-321.
- PwC (2023). *Highlights of Nigeria's 2023 Fiscal Policy Measures*. PwC Nigeria. <https://www.pwc.com/ng/en/assets/pdf/highlight-of-nigeria-2023-fiscal-policy-measures.pdf>
- PwC Nigeria (2019). *Affordable Housing Delivery in Nigeria: Prospects and Challenges*. PwC Nigeria.
- Saibu, M. O. (2018). Fiscal Policy and Economic Growth in Nigeria: An Econometric Approach. *Journal of Economics and Sustainable Development*, 9, 1-12.
- Sarakiri, J. A. (2024). Crowding Effects of Government Borrowing on Activities in the Private Sector: Another Evidence from Nigeria. *Journal of Accounting and Finance*, 10, 18-32.
- Van Hoenselaar, F., Cournède, B., & Roulet, C. (2021). *Mortgage Finance across OECD Countries: Borrowers' Perspectives on Accessing Finance for Housing*. OECD Economics Department Working Papers, No. 1693.
- World Bank (2020). *Nigeria Housing Finance Program: Policy Notes*.
- World Bank (2023). *Innovative Strategies to Finance Sustainable Development*. <https://www.worldbank.org/en/news/feature/2023/04/13/innovative-strategies-to-finance-sustainable-development>
- World Bank (2024). *Distributional Crowding Out Effects of Public Debt on Private Investment in Developing Economies*. Policy Research Working Paper 10786.
- Yiu, C. Y. (2023). Are Central Banks' Monetary Policies the Future of Housing Affordability Solutions. *Urban Science*, 7, Article 18. <https://doi.org/10.3390/urbansci7010018>
- Yusuf, A., & Mohd, S. (2021). The Impact of Government Debt on Economic Growth in Nigeria. *Cogent Economics & Finance*, 9, Article ID: 1946249. <https://doi.org/10.1080/23322039.2021.1946249>