
THE DRIVERS OF HOUSING SECTOR PERFORMANCE IN NIGERIA: AN EMPIRICAL ANALYSIS OF MORTGAGE FINANCE AND POLICY THRUSTS

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ABSTRACT

Nigeria faces a critical and growing housing deficit, which has escalated from 7 million units in 1991 to an estimated 28 million by 2024, driven by rapid population growth and urban migration. Hence, this paper examines the drivers of housing sector performance in Nigeria between 1992 and 2025, focusing on the "triple pillars" of mortgage bank operations: mobilizing deposits, providing loans, and building equities. Rooted in investment-based theory, this research utilized the Autoregressive Distributed Lag (ARDL) bound test approach to analyze the relationships between mortgage finance variables and housing supply, proxied by construction GDP. Secondary data were sourced from the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), and the World Bank, among others. Findings revealed that mortgage equities and the monetary policy rate have a statistically significant influence on housing sector supply in the short run. However, no explanatory variables demonstrated a statistically significant impact in the long run. The study identifies a critical paradox where construction GDP is rising while the actual availability of housing units for the populace continues to decline. To address these challenges, this paper recommended that the Federal Mortgage Bank of Nigeria (FMBN) transition from volatile short-term deposits to sustained long-term savings schemes. Additionally, the government should shift policy focus toward mass social housing using locally produced materials. Also, the Nigeria Mortgage Refinance Company (NMRC) should further integrate mortgage-backed securities into the capital market to mitigate short-run volatility and incentivize private sector participation.

KEYWORDS: Mortgage Finance; Housing Supply; Monetary Policy; Construction GDP and Nigeria.

JEL Codes: G21, R31, E52, L74 and O55

I. INTRODUCTION

Globally, housing is widely recognised as a fundamental human need and an essential component of sustainable urban development. Beyond serving as physical shelter, housing plays a crucial role in promoting the physical, social, and economic well-being of individuals and communities. Housing encompasses the quality, affordability, and accessibility of dwellings, along with access to essential services such as water, sanitation, and energy, all within a framework that ensures equity and sustainability (UN-Habitat, 2023). Scholars have emphasised that housing should not be seen merely as buildings or physical structures, but as a multidimensional concept that reflects living conditions, socio-economic status, and quality of life (Lekwot *et al.*, 2012; Ihuah *et al.*, 2014).

However, global housing crisis remains a persistent challenge, but it is particularly severe in less developed countries, especially across Africa (Olotuah & Bobadoye, 2009). With a projected population of about 237.5 million as of 2025, according to the United Nations, Nigeria is the most populous nation in Africa and the sixth most populous country globally. Projected growth estimates indicated it could reach 262 million by 2030 and 398 million by 2050 (Worldometer, 2023). This has serious implications for housing demand as Nigeria continues to struggle with an alarming housing deficit. Nigeria's housing gap is huge, necessitating more appropriate and sustainable housing provision. Therefore, there is a need for consistent production of 700,000 housing units annually for the next 20 years from 2018 to neutralise the country's housing deficit (World Bank, 2018).

Historical estimates revealed a rising deficits trend from 7 million units in 1991 to over 28 million units by 2024 (Friedman & Rosen, 2018; Federal Mortgage Bank, 2024). The Federal Mortgage Bank estimates that over ₦21 trillion would be required to close the rising housing gap, which signaled the need for collaborative efforts between the government and private sector stakeholders. By implication, the demand for affordable housing in Nigeria is huge and growing in the face of a sizable and increasing deficit and dearth of existing interventions aimed at closing this gap (World Bank, 2018). According to the World Bank in its Nigeria's Affordable Housing Project 2018 Report, macroeconomic conditions in Nigeria are the greatest impediments to affordable housing in the country.

However, there have been controversies about the enormity of the deficit in the Nigerian housing sector, as estimates on the housing deficit in Nigeria have been widely debated on grounds that they are not based on any credible research. For example, the National Bureau of Statistics is yet to have a repository on housing adequacy or shortages in the country. These bring to the fore the need for an urgent population and housing census in Nigeria, to enhance an evidence-based assessment of the housing sector as well as promote informed policy decisions to improve the sector that is underpinned by data (Nigerian Economic Summit Group [NESG], 2024).

Nevertheless, a World Bank working paper released in 2021 titled “Introducing Adequate Housing Index”, provided the most reliable estimate of the housing deficit in Nigeria. The report was necessitated as a result of the search for research-based data on the housing deficit. The Report introduced a micro-founded methodological framework to estimate the housing stock deficit in 64 emerging economies as of 2019 and a projected their housing deficit to 2030. Findings from the Report put Nigeria's housing deficit at 15.56 million units as at 2019, which brought the housing deficit to population ratio to 8 percent. While Nigeria appears to be better placed in terms of its housing deficit to population ratio compared to countries like Ethiopia, Kenya, Uganda and the Democratic Republic of Congo, it underperformed countries like Egypt and South Africa (Behr *et al.*, 2021).

Specifically, Nigeria’s housing deficit to population ratio stands at 8%, with a deficit of 15.56 million against a population of approximately 188.77 million. When compared to other emerging economies, Nigeria is outperformed by Egypt, which has a deficit ratio of only 1%, and Mexico, with a ratio of 3%. South Africa also maintains a lower housing deficit ratio than Nigeria at 4%, while India has a slightly lower ratio of 7% despite its much larger population. In contrast, countries like Ethiopia and the Democratic Republic of Congo face higher deficit ratios of 13%, while Kenya and Uganda both have ratios of 12%. The Adequate Housing Index shows significant variation across these countries, with Egypt scoring the highest at 0.95 and the Democratic Republic of Congo the lowest at 0.38; Nigeria holds a moderate index score of 0.55 (Behr *et al.*, 2021). The statistics suggested that Nigeria needs to adopt more sustainable methods and examine successful international models, such as Singapore’s National Housing Fund or Mexico’s institutional framework, to address its increasing deficit. Nigeria's housing deficit to population ratio of 8 percent is still a far cry from countries like Egypt with 1 percent and South Africa with 4 percent. Other emerging economies like India and Mexico also outperformed Nigeria, with 7 percent and 3 percent, respectively. Thus, Nigeria needs to design sustainable methods of addressing the issue of increasing housing

deficit in the country. For example, Mexico created a comprehensive institutional framework, but its urban policies were not however connected to the housing policy. This ultimately led to many abandoned houses (UN-Habitat, 2018). In Singapore, the supply of land by the government, focused on urban planning and design. The establishment of the National Housing Fund created an institutional framework that provides public housing access, with about 80 percent of Singaporeans living in social housing (Adenikinju, 2019). Many Asian countries are now following this model of creating a fund where people can access credit and market players can access funds for development. It would be insightful to examine the policies these countries have adopted to make more housing available and achieve a lower deficit-to population ratio.

Nigeria's recurring housing deficit issue stands as a severe challenge, creating the looming need for her teeming populace to live in decent places of shelter (Moore, 2019). Evaluating Nigeria's housing deficit, Moore (2019) presented a detailed trend of housing deficit in Nigeria from 1991 to 2019 as Nigeria's housing deficit has consistently increased in tandem with its population growth over the last three decades. Between 1991 and 1993, with a population of 104 million, the housing deficit was estimated at 4–7 million units, primarily due to mortgage inefficiency. By 2007, as the population rose to 145 million, the deficit increased to between 8 and 10 million units, driven by urban migration and slum demolition. The period between 2013 and 2015 saw the deficit climb to 16–17 million units for a population of 178 million, with causes attributed to overpopulation, urban expansion, and rising poverty. Between 2017 and 2019, the deficit reached its highest levels of 18–22 million units against a population of 184 million, fueled by continued poverty, overpopulation, and urban migration. Beyond these specific trends, the deficit is further exacerbated by inefficient housing policies, ineffective land allocation mechanisms, and a lack of access to inexpensive capital.

It is clear that Nigeria's housing deficit continues to increase alongside population growth. The key challenges facing the housing sector in the review periods were overpopulation, increased urban migration, limited supply of housing units, underperforming sector and the country's high poverty rate. Other causes of housing deficit in Nigeria are rapid urbanization, increased population, inefficient housing policy, ineffective land allocation mechanisms, and a lack of accessible, inexpensive capital contribute to Nigeria's housing shortage (Asikhia, 2025).

In order to tackle recurring Nigeria's housing deficit, the Nigerian government had embarked on several housing policies in order to provide adequate housing for the teeming population.

For example, the Housing Policy under the National Development Plan (NDP 1) (1962-68); National Development Plan (NDP 2) (1970-74); National Development Plan (NDP 3) (1975-80), and National Development Plan (NDP 4) (1981-85) were designed to specifically address housing deficit with proposed housing units. Specifically, the National Development Plan (NDP 1) (1962-68) blue print proposed to provide 24,000 housing units. However, the Programme could not achieve its objectives due to the outbreak of the Nigerian civil war (1967-1970). Only 500 units were built by the Federal Government. This, thus, created a wide deficit of 23,500 units in the targeted housing units. While, the 1991 National Housing Policy was intended to ensure that all Nigerians own or have access to decent housing accommodation at affordable cost by the year 2000. However, as plausible as the programme was, there was no visible impact on the economy, thus it was overhauled.

Another policy attempt aimed at solving Nigeria's housing deficit was the National Housing Programme (1994-1995). Under this Programme, it was proposed that 121,000 housing units were to be constructed for all income groups. The nine newly created states in Nigeria were to have 5,000 housing units each, while the other 21 states would share 76,000 housing units. As in the case of previous housing programmes, it failed to deliver on its promises. Given the shortfall, the Nigerian government also adopted the National Housing Policy (2006) which led to the creation of the Federal Ministry of Housing and Urban Development. The National Housing Policy (2006) has a goal of ensuring that all Nigerians own or have access to decent, safe, and healthy accommodation at affordable cost. Even with the adoption of the Nigerian National Housing Policy (NHP 2006), there is still huge housing deficit in Nigeria.

The National Housing Programme (NHP) was initiated in 2016. It led to the development of 4,878 housing units between 2016 and 2019. In the same period, about 1,970 housing units were delivered through the Public-Private Partnership financing framework (Federal Ministry of Finance Budget and Planning, 2020). Also, under the Economic Recovery and Growth Plan (ERGP, 2017), the plan sets out to achieve the construction of 10,000 housing units per annum by 2020, implement a proposed Family Homes Fund and recapitalise the Federal Mortgage Bank of Nigeria from N2.5 billion to N500 billion. Specifically, Family Homes Fund aimed to provide long-term low-cost mortgage finance by raising capital from the private sector, multilateral agencies, and impact investors. Further, the Medium-Term National Development Plan (MTNDP) for 2021-2025 aimed to achieve improved access to affordable housing by providing one million housing units per year while achieving a real estate-to- GDP ratio of 8.38 percent by 2025.

Despite the cumulative policy efforts by the government, there is still huge housing deficit in Nigeria., as the issue of housing shortages has wide-ranging implications. Housing deficit, when left unabated, could lead to increase in crime, outbreak of diseases, unaffordable house prices and rent, poor standards of living as well as high mortgage payments. Due to this, the United Nations (UN) advocated for the adoption of Goal 11 globally. Goal 11 was targeted to capture a holistic perspective of the housing sector, with a view to achieving quality and affordable housing units for all by the year 2030. According to the Programme, a high quality housing sector is one of the benchmarks for socioeconomic growth and development. Furthermore, this study believes that expanding access to affordable options such as low-interest loans from the Federal Mortgage Bank of Nigeria (FMBN), could help in ameliorating the housing needs of Nigerians. Thus, this paper examined the drivers of housing sector performance in Nigeria with a focus on mortgage banks deposit; mortgage loan; and mortgage equities as mortgage bank operations revolve around three key interconnected components: mobilizing funds (deposits), providing loans (mortgage loans), and building ownership share (mortgage equity) vis-à-vis the underlying policy thrusts.

II. Literature Review

Theoretical Framework

The theoretical background of this paper is the investment base theory by Poterba (1984). In view of this theory, the housing market actually consists of two markets: one for the stock of existing houses, which determines the price of houses, and another for the flow of new construction, which determines the level of new investment (Kearl, 1979., Poterba. 1984 and Topel & Rosen, 1988). Shocks to either of these markets can affect house prices. Equilibrium in the market for existing owner-occupied houses requires that homeowners, in their role as investors, earn the same return on housing investments as on other assets. This requires

$$R_H / P_H = \left[(1 - \theta)(i + \tau_p) + \delta + \alpha + m - \pi^c \right] \quad (1)$$

Where R_H denotes the marginal value of the rental services per period on owner-occupied homes, P_H the price of existing houses, θ is the investor's marginal tax rate, i the nominal interest rate, τ_p the property tax rate as a share of house value, δ the depreciation rate on housing capital, α the risk premium required on assets with the risk characteristics of housing, m the maintenance cost per unit value, and π^c is the investor's expected rate of nominal house price appreciation. Both interest payments and property taxes can be deducted

from federal income taxes. The housing stock at the beginning of each period is determined by past investment.

The housing stock in turn determines R_H . All but one of the other parameters in equation (1), the expected inflation rate, are exogenous to the housing market. Closing the model and determining the level of house prices therefore requires some choice of π^e . The most theoretically appealing model of expected housing inflation imposes rational expectations on housing investors and recognizes the link between the current level of house prices and future housing investment. An investment supply equation relates the flow of net new construction, $H_t - H_{t-1}$, to the ratio of house prices to construction costs, P_H / C :

$$H_t - H_{t-1} = \phi(P_H / C_t) - \delta H_{t-1} \quad (2)$$

Under the perfect foresight assumption that $\pi_t^e = (P_{H,t+1} - P_H) / P_H$ equations (3.1) and (2) become a pair of difference equations in H_t and P_H that can be solved forward to determine the initial price of housing (Poterba, 1984). In this framework, an increase in the real price of houses could arise from supply shocks that raise current or future construction costs or from current or anticipated future demand shocks that raise the rental service value of the owner-occupied housing stock.

The focus of this theoretical framework is on housing supply as a function of a number of economic factors such as actual house price, new building cost, land availability, and finance availability (Okolie & Erhijakpor, 2020). Poterba (1984) stated three (3) key assumptions. First, the housing sector is made up of competing enterprises, and its output is determined by the real price of house construction; second, materials of production have limits; and third, an increase in housing demand leads to an increase in the equilibrium price structure of housing. Credit availability and construction costs are the two most important factors of housing supply.

Empirical Review

Using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach, John *et al.* (2025) investigated the housing challenge in Nigeria within the context of current economic conditions and government policies. The study identifies key factors affecting housing affordability, such as inflation, poor maintenance practices and ineffective regulatory enforcement. The study found significant gaps between policy intentions and outcomes, highlighting the need for more robust and inclusive housing strategies.

Ibrahim *et al.* (2025) examined the intricate relationships between mortgage finance, housing development and the interactive effect of macroeconomic factors in Nigeria. This research employs data on housing delivery, mortgage finance and macroeconomic factors. Empirical analysis was conducted using the Autoregressive Distributed Lag Model. Findings revealed that mortgage loan interaction variable have a very weak positive effect on housing delivery in the long run, mortgage equity's negative effect was also reduced in the long run. Mortgage interest rate was also found to have a reduced negative effect on housing delivery in the long run.

Salisu *et al.* (2025) constructed alternative models to establish the dynamic relationship between exchange rates and housing affordability by estimating both the short-run and long-run relationship between exchange rates and housing affordability for 18 OECD countries from 1975Q1 to 2022Q4. Exchange rate appreciation improves housing affordability in the short run, whereas this connection tends to dissipate in the long run. Moreover, inflation can worsen housing affordability during turbulent times, such as the global financial crisis, in both the short and long run.

Johnnie and Nwala (2025) examined the key factors influencing the Nigerian property market, focusing on pricing, taxation, location, and the impact of war and crisis. The study employed a mixed-method approach, utilizing both qualitative and quantitative techniques to measure market participants' perceptions. Data were gathered from 95 respondents using a structured questionnaire, Population of the study included Estate Surveyors, Valuers, public officers, and property developers across Lagos, Ibadan, Port Harcourt, Enugu, Abuja, Kaduna, and Kano. Findings indicated that 69% of participants strongly agree that pricing is a major determinant of market trends, influencing both investors and practitioners. Inflation, construction costs, and fluctuating exchange rates further escalate property prices, limiting homeownership opportunities. Additionally, 62% of respondents agree that taxation significantly affects investment decisions, with high property taxes discouraging market participation. Location also plays a critical role with about 69% of the participants strongly agreeing that location is a factor to be considered as a determining factor for investors favoring urban centers like Lagos and Abuja due to better infrastructure and economic opportunities. War and crisis further diminish market stability, reducing investments and lowering property values in conflict-affected areas.

Okongwu *et al.* (2025) examined the key factors influencing low-cost housing construction in South-East Nigeria. Descriptive statistics and Ordinal Logistic Regression (PLUM) were employed to assess the significance of various determinants. Findings revealed that 63% of

respondents reported unavailability of affordable housing, underscoring a persistent housing gap. Regression results showed that economic factors (income levels, construction costs, and access to finance), social/cultural factors (cultural perceptions and community engagement), and market dynamics (demand-supply balance and competitive environment) significantly affect housing delivery ($p < 0.05$). In contrast, policy/regulatory (land use regulations, government policies) and technological factors (site conditions, resource availability) had no significant influence.

Onigbogi *et al.* (2025) assessed the current state of housing supply and explores the underlying factors influencing housing provision in urban Abuja, Federal Capital Territory (FCT), Nigeria. Using a quantitative research design, data were collected from 206 housing providers across Phases 2 and 3 of the city through structured questionnaires. The findings revealed that the organised private sector dominates housing supply (82.9%), while public private partnerships and federal government initiatives contribute significantly less. Providers' discretion emerged as the most influential factor (44.2%) in housing design and delivery, followed by economic considerations (28.2%), with limited regard for residents' preferences or affordability. These dynamics point to a supply-driven housing market that prioritises profitability over user needs, contributing to a growing disconnect between housing provision and socio-cultural realities.

Kalu and Bruno (2024) investigated the relationship between housing finance and sustainable housing development in Nigeria using data from the Nigeria General Household Survey Panel 2018-2019. The study adopted the Geographically Weighted Regression (GWR) methodology and the panel fixed effect model to study housing finance, and sustainable housing development in a bid to explore their implications for urbanization in Nigeria. Results suggested that housing finance has a positive and significant effect on sustainable housing availability in Nigeria. Results also suggested that housing development has positive significant impact on urbanization in Nigeria.

Fan *et al.* (2024) used the stochastic frontier models to calculate the fundamental value in the housing in Chinese large and medium cities, and then obtain indexes which could measure the house prices' deviations from the fundamental value. With the macroeconomic data in the city-level, the paper empirically investigates the effects of the house prices' deviations on macro-economic variables like consumption, investment and output. The study revealed that the housing bubble exists in most Chinese cities, and first-tier cities fare the worst. House prices over the fundamental value, which could increase the scale of real estate investment,

bring adverse impacts on GDP, as it causes declining civilian consumption and discourages real economy's investment and production.

Ozabor *et al.* (2024) attempted to identify the determinants of housing demands and costs of residential rents within the city (Asaba). The data for the study comprised of the primary (questionnaire data) and secondary (historical housing data) types. For effective questionnaire administration, the study area was stratified into high, medium and low income areas. The Analysis of Variance (ANOVA) and the Spearman's rank correlation coefficient were deployed for data analyses. The results indicated that the key determinants of residential housing demand and costs were ease of access to public transport (69 %), nearness to security formations (80 %) and higher demand for houses in supply (75.8 %); and the Spearman's rank correlation showed that these factors were significant at $P < 0.05$. Other factors such as availability of electricity and access to water supply were not significant determinants of choice of housing at $P > 0.05$. This is due to the fact that the whole region lacks adequate electricity supply and water is self-harnessed through boreholes. ANOVA showed that there was a significant temporal variation in the cost of residential housing rents at $p < 0.05$ ($F=69.03$; sig 0.000).

Akinwale *et al.* (2024) investigated the macroeconomic factors influencing housing demand in Saudi Arabia using quarterly data for the period 2010 Q1–2024 Q2. The autoregressive distributed lag bounds test and vector error correction model are used to determine the dynamic relationship between the macroeconomic factors. The results reveal that the F -statistic value of 4.2043 is higher than the upper bound of the critical values at 5% level of significance, indicating long-run association among the series. While there is a negative and significant influence of interest and inflation rates on housing demand, income per capita and population have a positive and significant influence on housing demand. Similar result is found for the short run analysis except income per capita which has positive but insignificant impact. More so, the population seems to be very crucial to housing demand in both short-run and long-run periods.

Agava and Gamu (2024) examined the effect of macroeconomic factors on residential real estate investment returns in the cities of Abuja and Lagos, Nigeria. A survey research design was employed using a questionnaire to collect real estate transaction data from 2008 to 2022 from estate surveying and valuation firms in the study areas. Rental and capital value data collected were used to construct rental and capital value indices and total returns on investment. Granger causality (GC) and multiple regression models were adopted to evaluate the effect of selected macroeconomic variables on residential real estate investment returns.

The study found a progressive upward movement in rental and capital values of residential real estate investment. Total and risk-adjusted returns on investment were equally positive. But only the inflation rate, unemployment rate and real gross domestic product (GDP) per capita were found to be the major determinants of residential real estate investment returns within the study period.

Udensi *et al.* (2024), using a quantitative research design, found that increased housing supply plays a stabilizing role in moderating housing prices, while rising income levels drive demand elevates prices. Inflation is identified as a key driver of housing costs, primarily due to escalating construction expenses, while interest rates show minimal impact on housing prices due to limited mortgage accessibility in Nigeria.

Soyemi *et al.* (2024) examined the impact of primary mortgage institution financing options and housing sector development in Nigeria. The panel regression estimation technique was applied on the model intending to examine the impact of the financing option of customer deposit, national housing fund, development loan, and shareholder equity on housing development proxied with urban population. The findings from fixed effect model revealed that national housing fund and shareholder's equity have positive and significant effect on the urban population while customer deposit has negative and significant effect on urban population in Nigeria.

Mboto *et al.* (2023) examined factors of mortgage that affect housing development in Nigeria. The study employed Ordinary Least Squares Multiple Regression statistical techniques. Findings revealed thus; there was a significant effect of mortgage loans on housing development; there was a significant effect of interest loans on housing development; there was a significant effect of mortgage investment on housing development, and there was a significant effect of mortgage bank deposit on housing development.

Yinusa *et al.* (2017) examined the impact of mortgage financing on housing development in Nigeria using the Ordinary Least Squares method. The finding of this study revealed that Microfinance Bank loans to mortgage have a negative impact on housing development, while primary mortgage loans to mortgage have a significant positive influence on housing development in Nigeria. Also, the government allocation to housing revealed that an insignificant positive relationship exists between government allocation to housing and housing development in Nigeria.

III. Data and Method

Model Specification

The model for the study is based on the theoretical framework and model that was adapted from the work of Yinusa *et al.* (2017) that examined the impact of mortgage financing on housing development in Nigeria, using the Ordinary Least Squares method from 1990 to 2018. The model applied in the study was of the form:

$$UPG_t = \alpha_0 + \alpha_1 MLM_t + \alpha_2 PMLM_t + \alpha_3 GAH_t + \mu_t \quad (3)$$

Where, UPG_t = Urban population growth (annual %)., MLM_t = Microfinance Bank loans to mortgage at time t ., $PMLM_t$ = Primary Mortgage Loans to Mortgage at time t ., GAH_t = Government Allocation to Housing at time t ., α = Intercept and $\alpha_1 - \alpha_3$ = Coefficient of the Independent Variables. However, the model of Yinusa *et al.* (2017) was modified by including construction GDP to proxy housing supply as dependent variable, housing finance variables such as mortgage banks deposit, mortgage loan, mortgage equities, and control variable such as monetary policy rate that captures the impact of the different housing policies on housing sector performance in Nigeria as in dependent variables. Therefore, the modification of the model can be expressed as follows:

Housing Sector Supply Model

$$CGDP = \beta_0 + \beta_1 MBD + \beta_2 MOL + \beta_3 MEQ + \beta_4 INFR + \beta_5 MPR + \varepsilon \quad (4)$$

Where, $CGDP$ = Construction GDP, a proxy for housing sector supply; MBD = Mortgage banks deposit; MOL = Mortgage loan; MEQ = Mortgage equities; MPR = Monetary policy rate; ε_{it} is the error term and β_0 is the intercept. β_1 to β_5 are the coefficients of the explanatory variables. This study a priori expectations of the parameters to be estimated are as expressed below:

$\beta_1 > 0$; The coefficient of mortgage banks deposit is expected to have a positive impact on housing sector supply; $\beta_2 > 0$; The coefficient of mortgage loan is expected to have a positive impact on housing sector supply; $\beta_3 > 0$; The coefficient of mortgage equities is expected to have a positive impact on housing sector supply; $\beta_4 > 0$; The coefficient of monetary policy rate is expected to have a negative impact on housing sector supply.

This paper examined the drivers of housing sector performance, specifically focusing on the "triple pillars" of mortgage bank operations: mobilizing funds (deposits), providing loans (mortgage loans), and building ownership shares (mortgage equity) in Nigeria between the years 1996 and 2025. The method of analysis used in this study is the bound test approach to

cointegration which is associated with Autoregressive Distributed lag (ARDL) method developed by Pesaran *et al.* (2001). An ARDL Model that was used to run the bound test for cointegration is;

$$\Delta Y_t = \beta_0 + \sum_{i=1}^p \beta_i \Delta y_{t-i} + \sum_{j=0}^q \partial_j \Delta X_{t-j} + \phi_1 y_{t-1} + \phi_2 X_{t-1} + \mu_t \quad (5)$$

Where Δ denotes the first difference operator, β_i , ∂_j stand for the short-run coefficients, ϕ_1 , ϕ_2 are for the long-run coefficients and μ_t is the disturbance(white noise) term.

Transforming equation (4) into an ARDL Model results as follows:

$$\Delta CGDP_t = \alpha_0 + \sum_{i=1}^m \alpha_{1i} CGDP_{t-i} + \sum_{j=0}^n \alpha_{2i} \Delta MBD_{t-j} + \sum_{k=0}^o \alpha_{3i} \Delta MOL_{t-k} + \sum_{l=0}^p \alpha_{4i} \Delta MEQ_{t-l} + \sum_{l=0}^r \alpha_{5i} \Delta MPR_{t-l} + \alpha_6 CGDP_{t-1} + \alpha_7 MBD_{t-1} + \alpha_8 MOL_{t-1} + \alpha_9 MEQ_{t-1} + \alpha_{10} MPR_{t-1} + \varepsilon_t \text{ --- (6)}$$

The bounds test is conducted by testing the null hypothesis (H_0) against the alternative hypothesis (H_1) using the following equations:

$$H_0 : \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0 \text{ and } H_1 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$$

The results of the bounds test derived from the computed F-Statistic are comparable to those of Pesaran *et al.* (2001), who concluded that cointegration between the series is present if the F-Statistic is greater than the upper bound I (1) in each case, rejecting the null hypothesis of no cointegration. Additionally, the series Error Correction Model based on the ARDL framework is as follows:

$$\Delta \ln CGDP_t = \alpha_0 + \sum_{i=1}^m \alpha_{1i} \ln CGDP_{t-i} + \sum_{j=0}^n \alpha_{2i} \Delta MBD_{t-j} + \sum_{k=0}^o \alpha_{3i} \Delta MOL_{t-k} + \sum_{l=0}^p \alpha_{4i} \Delta MEQ_{t-l} + \sum_{l=0}^r \alpha_{5i} \Delta MPR_{t-l} + \alpha_6 \ln CGDP_{t-1} + \alpha_7 MBD_{t-1} + \alpha_8 MOL_{t-1} + \alpha_9 MEQ_{t-1} + \alpha_{10} MPR_{t-1} + \varepsilon_t \text{ ----- (7)}$$

Where,

ECT_{t-1} = lagged Error correction term. The output evolution process that agents use to react to the prior period of prediction errors is captured by the ECT.

This method has various advantages over Johansen co-integration approach; i.e. It can be used to analyze variables having any order of integration because of its dynamic nature. Since for this research the estimated variables have different order of integration (from the unit root tests), ARDL is applied to this research for analyzing dynamic relationship between the variables. The ARDL approach has been followed because the estimated independent variables can be any order of integration as they can either be purely I (0) or purely I (1) or

mutually co-integrated (Pesaran *et al.*, 2001; Katircioglu, 2009, 2010; Gkmenolu & Taspinar, 2016). The ARDL model provides valid results because serial correlation and endogeneity problem issues don't exist in the ARDL estimates and also since it can be applied if there are endogenous regressors (Pesaran *et al.*, 2001). Also the ARDL approach appears to yield more reliable estimates on data for small samples compared to other techniques for conventional tests of co-integration.

IV. RESULTS AND DISCUSSIONS

Descriptive Statistics

Table 1 presents the descriptive statistics for the paper.

Table 1: Summary Statistics Results.

	CGDP	MBD	MOL	MEQ	MPR
Mean	149.9776	53.11353	46.56824	26.25471	14.18441
Median	96.84500	26.63000	35.28500	7.225000	13.50000
Max	590.7100	186.9500	132.8800	103.5800	27.50000
Min	8.750000	0.630000	0.210000	0.340000	6.000000
Std. Dev.	153.9138	63.06313	47.65820	33.63251	4.453060
Skew	1.358383	1.043752	0.515848	0.967178	1.069268
Kurtosis	4.184223	2.500962	1.776673	2.316541	5.024318
J-B	12.44287	6.526175	3.627982	5.962539	12.28420
Prob	0.001986	0.038270	0.163002	0.050728	0.002150
Obs	34	34	34	34	34

Source: Author's Computation, 2026 (Eviews-12)

From Table 1, construction GDP has an approximate average of ₦149.9776 and it ranges from 8.750000 (minimum) to 590.7100 (maximum), with a standard deviation of ₦153.9138. Mortgage banks deposit (MBD) has a mean value of ₦53.11353, with the standard deviation of ₦63.06313, minimum and maximum values of 0.630000 and 186.9500 respectively. Similarly, Mortgage loan (MOL) has an approximate average of ₦46.56824 and it ranges from 0.210000 (minimum) to 132.8800 (maximum), with a standard deviation of ₦47.65820. Also, Mortgage equities (MEQ) has an approximate average of ₦26.25471 and it ranges from 0.340000 (minimum) to 103.5800 (maximum), with a standard deviation of ₦33.63251. Further, Monetary policy rate (MPR), has an approximate average of 14.18441 percent and it ranges from 6.000000 (minimum) to 27.50000 (maximum), with a standard deviation of 4.453060 percent.

Furthermore, Table 1 displayed the skewness coefficient, a measure of how far a distribution deviates from symmetry, with all the variables having skewness values greater than one, except MOL and MEQ variables with skewness value less than one. The entire data series are

not platykurtic (not having negative values), as confirmed by the kurtosis result, which measures a distribution's degree of peakedness in relation to a normal distribution. Additionally, majority of the variables are not nominally distributed., since the accompanying Jarque-Bera probability values of these variables have a significance level less than 5%. However, MOL and MEQ corresponding Jarque-Bera statistic is nominally distributed. Since the accompanying Jarque-Bera probability values of these variables have a significance level greater than 5%, it may be concluded that it has a normal distribution.

Correlation Analysis

Correlation analysis helps shed light on each variable (e.g., Mortgage banks deposit, Mortgage loan, Mortgage equities, and Monetary policy rate) individually and their association with the dependent variable (Construction GDP). A positive correlation would indicate a positive relationship between the two variables. An inverse correlation, alternatively, indicates a negative correlation.

Table 2: Correlation Matrix Result.

	CGDP	MBD	MOL	MEQ	MPR
CGDP	1.0				
MBD	0.17	1.0			
MOL	0.57	0.61	1.0		
MEQ	0.28	0.57	0.78	1.0	
MPR	0.02	-0.56	-0.35	-0.50	1.0

Source: Researcher's Computations using E-Views 12.

The correlation coefficients presented in Table 2 are considerably below 0.8, indicating that there is no serious multi-collinearity in the model. This finding supported the general rule of thumb that if simple correlation coefficient between two regressors is greater than 0.8 or 0.9, then, there is a serious problem of multicollinearity (Senaviratna & Cooray, 2019). By implications, all the variables are free from the problem of multicollinearity. Additionally, the correlation coefficients presented in Table 4.3 indicated a positive association between Construction GDP (CGDP), and Mortgage banks deposit (MBD), Mortgage loan (MOL), Mortgage equities (MEQ) and Monetary policy rate (MPR) in Nigeria during the study period. However, the correlation between housing, water, electricity and gas consumer price index (HCPI), and Mortgage loan (MOL) was found to be the strongest at 57 percent. To ensure that the collected data are fit for the study, the stationarity test was conducted on the data.

Unit Root Results

Commonly used among the unit root tests is the Augmented Dickey-Fuller (ADF) test for testing for stationarity. A stationary process is said to have properties (such as its mean, variance, and autocorrelation function) which are unchanging over time, while for a non-stationary series these properties change over time and often render its' properties invalid for regression analysis. The output of the Augmented Dickey-Fuller (ADF) unit root test is reported in Table 3 below:

Table 3 Traditional Unit Root Test Results .

Variable	Method	Level	First Diff.	Order of Integration
		Stat. (Prob.)	Stat. (Prob.)	
CGDP	ADF	-1.004477 (0.9297)	-5.430631*(0.0010)	I(1)
MBD	ADF	-1.159584(0.2194)	-5.984232*(0.0000)	I(1)
MOL	ADF	-2.149007(0.5009)	-6.150843*(0.0001)	I(1)
MEQ	ADF	-1.037177 (0.2636)	-9.018330*(0.0000)	I(1)
MPR	ADF	-3.194263** (0.0294)	-8.484816*(0.0000)	I(0)

Note: *, Indicates stationary at the 1% & 5% level.**

Source: Researcher's Computations using E-Views 12

From Table 3, Monetary policy rate (MPR) variable tends to be stationary at level according to the conventional test of the Augmented Dickey-Fuller (ADF). However, Construction GDP (CGDP), Mortgage banks deposit (MBD), Mortgage loan (MOL) and Mortgage equities (MEQ) variables are stationary at first difference. By implication, the selected variables do not contain a unit root and are therefore stable over time, making them appropriate for use in further regression analysis without differencing. This outcome implies a degree of stability in the selected variables during the period under review.

Cointegration Test

The variables were all observed to be integrated at various levels and thereby, all the variables satisfied the ARDL - bounds test approach criteria which holds that if any or all the variable in the equation are integrated at level and first differencing or modifying, the (ARDL)- Bounds test approach would be applied. To carry out this test for variables in bound the reason behind testing for stationary test or property of variable is for ARDL bounds testing to become usable which holds that when variables are integrated at Level -I(0), and First difference - I(1) Or Mixed of the variable. This means that the assumption of bounds testing will collapse in the presence of I(2) variable. This will imply that the use of bounds testing hypothesis breaks down in presence of I(2) variable. As shown in Table 3 based on

the unit roots test of the Augmented Dickey-Fuller (ADF), in this paper, the test results indicated that use of bounds test approach is appropriate for this research, because all the variables consist of a mixture of $I(1)$ and $I(0)$.

The co-integration test attempts to verify the presence of long-run relationship among these concerned variables. In case if co-integration exists between those concerned variables, then ARDL error correction model may apply. The results of cointegration tests is being presented in the Table 4:

Table 4: Result of ARDL Bounds Test for Cointegration.

Null Hypothesis: No Long-run Relationships Exist		
Test Statistic	Value	K
F-Statistic	5.040624	4
Critical Value Bounds		
Significance	Lower Bound	Upper Bound
5%	2.56	3.49

Source: Researcher's Computations based on E-Views 12

From Table 4, the bounds test value of the F-statistics which is 5.040624 is higher than the values of the upper and lower bound limit which are 2.56 and 3.49 at 5% critical level of significance. This means that there is a long run equilibrium relationship between the dependent variable and the explanatory variables of the model.

Autoregressive Distributed Lag (ARDL) Regression Results

Considering the cointegration on the dependent variable to the regressors in this paper, it was therefore to estimate the error correction models and the long-term model. The estimates are displayed in Table 5 as follows:

Table 5: ARDL Regression Results.

Dependent Variable: DLOG(CGDP)

Co-integrating Estimates (ECM Estimates)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MBD)	-0.003	0.001	-0.252	0.80
D(MBD(-1))	0.001	0.001	0.700	0.50
D(MOL)	0.002	0.001	1.400	0.19
D(MOL(-1))	-0.003	0.002	-1.869	0.09
D(MEQ)	0.002	0.001	1.481	0.18
D(MEQ(-1))	0.004	0.001	2.412	0.04
D(MPR)	-0.031	0.007	-4.569	0.00
D(MPR(-1))	-0.023	0.010	-2.268	0.05
CointEq(-1)*	-0.153	0.034	-4.461	0.00
R-squared	0.772			
Adjusted R-squared	0.751			

Durbin-Watson stat	2.209			
Long Run				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MBD	-0.026	0.016	-1.599	0.15
MOL	0.048	0.023	2.074	0.07
MEQ	0.005	0.034	0.018	0.99
MPR	0.029	0.170	0.172	0.87
C	6.541	2.593	2.523	0.04

Source: Researcher's Computation Using EViews-12 (2026)

From Table 5, mortgage equities and monetary policy rate variables have a statistically significant influence on construction GDP, a proxy for housing sector supply either at their level or one period lag in the short run. By implications, mortgage equities and monetary policy rate variables are important in explaining housing sector supply in Nigeria throughout the research period. However, none of the explanatory variables has statistically significant statistically significant impact on housing sector supply in the long-run. Furthermore, one period lagged mortgage banks deposit, mortgage loan, mortgage equities and monetary policy rate at level are in agreement with this study a priori expectation in the short-run. While, mortgage loan, and mortgage equities variables conform to this study a priori expectations in the long run.

From Table 5, the Error Correction Model is as expected, negatively signed and highly statistically significant at one percent level. This is a further indication of the existence of long-run relationship between the dependent variable and the regressors. The absolute value of the coefficient lies between zero and 1, and it indicates that about 0.15 percent of the short-run deviation from the equilibrium (long-run) position is corrected annually to maintain the equilibrium.

With 77 percent of the variation in on construction GDP, a proxy for housing sector supply explained by the explanatory variables, the model's R-squared value of 0.772 indicated that it fits the data well. Also, the adjusted R-squared value of 0.751 indicated that the model is still very good even after accounting for the impact of insignificant estimators. Likewise, the DW statistic of 2.209 indicated that the problem of serial correlation does not exist. As such, the conclusions of this study can be trusted for formulating policy recommendations. Additionally, this study proceeded to examine the drivers of housing sector performance in Nigeria with focus on housing sector prices using housing, water, electricity and gas consumer price index, a proxy for housing sector prices in Nigeria.

Post Estimation Tests

This paper conducted a few diagnostic tests to assess the model's stability and applicability as well as the validity of the results. Results is as presented in Table 6 as follows:

Table 6: Diagnostic Test Results.

Test	Null Hypothesis	T-Statistic	Prob
Jarque-Bera	There is a normal distribution	1.764	0.41
Breusch-Godfrey LM	No serial correlation	8.564	0.13
Heteroskedasticity: Breusch-Pagan-Godfrey	No conditional heteroscedasticity	0.269	0.12

Source: Researcher's Computations based on E-Views 12

From Table 6, the model did not display serial correlation or heteroskedasticity during the study period. The heteroscedasticity tests indicated that the residuals are homoscedastic. The results of the diagnostic tests for serial correlation and heteroscedasticity suggest that the data is reasonably well behaved. Furthermore, the p-value for the normality test for the research period is greater than 0.05, indicating that the residues are distributed normally. This results in a uniform distribution of the residuals. As a result, the normal distribution null hypothesis was not rejected.

Stability Test Result

The stability test in Figure 1 also revealed that the housing sector demand model is stable during this study period as the plots of the charts lie within the critical bounds at 5% significant level. Bahmani-Oskooee and Rehman, (2005) noted that the null hypothesis that states the regression equation is correctly specified cannot be rejected when the plot of these statistics are within the critical boundaries at 5% significant level.

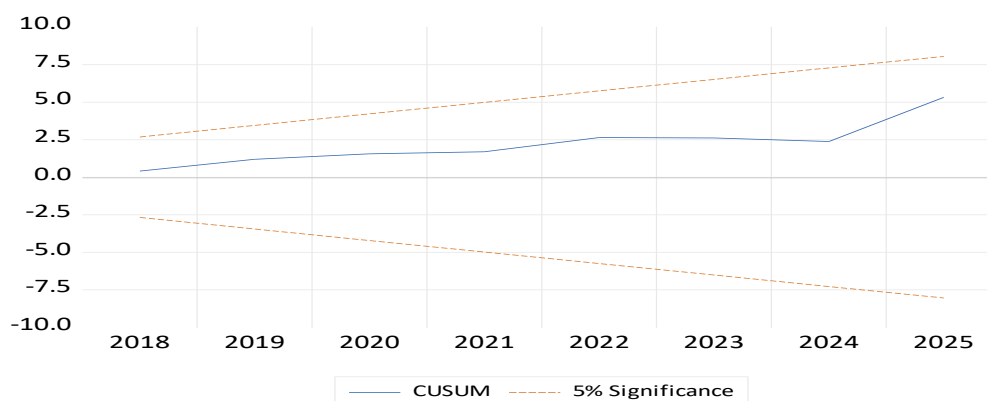


Figure 1: Stability Tests Result.

Source: Researcher's Plot using E-Views 12

DISCUSSION OF FINDINGS

From the estimated ARDL regression results in Table 5, mortgage equities and monetary policy rate variables have a statistically significant influence on construction GDP, a proxy for housing sector supply either at their level or one period lag in the short run. By implications, mortgage equities and monetary policy rate variables are important in explaining housing sector supply in Nigeria throughout the research period. The significant short-run impact of mortgage indicators on supply corroborated Mboto *et al.* (2023), who found that mortgage loans and interest rates significantly affect housing development in Nigeria. The finding that mortgage equities (MEQ) and monetary policy rates (MPR) significantly influence Construction GDP in the short run supports Poterba's (1984) Investment-based Theory, which identified credit availability as a primary determinant of housing output.

However, none of the explanatory variables has statistically significant statistically significant impact on housing sector supply in the long-run. Furthermore, one period lagged mortgage banks deposit, mortgage loan, mortgage equities and monetary policy rate at level are in agreement with this study a priori expectation in the short-run. While, mortgage loan, and mortgage equities variables conform to this study a priori expectations in the long run. Specifically, this research found that from the estimated ARDL regression in Table 5, one-unit increase in mortgage banks deposit will lead -0.003 and -0.026 units increase in construction GDP both in short-run and long-run respectively. This outcome does not conform to the study a priori expectations both in short-run and long-run. This outcome is inconsistent with the a priori expectations of the investigation.

On the other hand, mortgage loan is positively related to construction GDP both in the short-run and long-run. Consequently, one-unit increase in mortgage loan will lead 0.002 and 0.048 units increase in construction GDP both in short-run and long-run respectively. This is not conformity with theoretical prediction as mortgage loan is expected to influence construction GDP, a proxy for housing sector supply positively. Additionally, the positive long-run coefficients for mortgage loans align with Renaud's (1987) Finance-based Theory, which posited that private bank financing is the most effective way to facilitate a diversified and completed housing stock.

Also, the estimated impact of mortgage equities on construction GDP is positive both in the short-run and long-run. By implication, one-unit change or increase in mortgage equities will lead to 0.002 and 0.005 unit increase in construction GDP both in the short-run and long-run respectively. This outcome is consistent with the a priori expectations of the investigation and

studies such as Soyemi *et al.* (2024), whose findings indicated that shareholder equity has a positive effect on urban development. The estimated ARDL regression results in Table 5, furthermore indicated that monetary policy rate affects construction GDP negatively in the short run. In case of a 1% increase in monetary policy rate, it is foreseen that there will be a decrease of -0.031 percent in construction GDP in the short-run. This outcome is not in conformity with theoretical prediction. However, in the long run, monetary policy rate affects construction GDP negatively positively related. In case of a 1% increase in monetary policy rate, it is foreseen that there will an increase of 0.029 percent in construction GDP in the long-run.

V. CONCLUSION AND RECOMMENDATIONS

This paper Autoregressive Distributed Lag (ARDL) techniques to examined the drivers of housing sector performance in Nigeria for the period 1992 to 2025. This paper is rooted in the investment base theory by Poterba and depended on secondary data sourced from the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, World Bank UN Population Division, Trading Economics, Centre for Affordable Housing Finance Africa and Global Property Guide. The estimated ARDL regression result indicated that mortgage equities and monetary policy rate variables have a statistically significant influence on construction GDP, a proxy for housing sector supply either at their level or one period lag in the short run. By implications, mortgage equities and monetary policy rate variables are important in explaining housing sector supply in Nigeria throughout the research period. Therefore, the following recommendations were raised from the research findings.

- i. The Federal Mortgage Bank of Nigeria (FMBN) and Primary Mortgage Institutions (PMIs) should develop frameworks to transition from volatile short-term deposits to sustained, long-term savings schemes. This recommendation is due to the statistically significant positive impact of mortgage bank deposits on housing stock
- ii. Due to the negative long-run impact of mortgage loans on housing stock, the Federal Mortgage Bank of Nigeria (FMBN) and Primary Mortgage Institutions (PMIs) should develop frameworks to transition from volatile short-term deposits to sustained, long-term savings schemes.
- iii. Finding highlighted a paradox where construction GDP is rising while the actual availability of housing units is declining. Therefore, the Federal Ministry of Housing and Urban Development should shift its policy focus from high-value commercial construction toward mass social housing schemes that utilize locally produced materials.

iv. Additionally, to mitigate the short-run volatility seen in mortgage equities and pricing, the Nigeria Mortgage Refinance Company (NMRC) should continue integrating mortgage-backed securities into the capital market to mitigate short-run volatility. Similarly, government agencies such as the Nigeria Mortgage Refinance Company (NMRC) should create incentives for private sector equity participation and institutional investment to help bridge the massive housing gap.

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