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MORTGAGE-BACKED SECURITY AS AN OPTION FOR SOLVING THE NIGERIAN HOUSING PROBLEM

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Abstract

This study examines mortgage-backed securities as an option for solving the Nigerian housing problem. We identify the challenges inhibiting housing development in Nigeria and suggest mortgage-backed security as a solution for solving these problems of housing in Nigeria. The study also examines the impact of Primary Mortgage Institutions on housing delivery in Nigeria, covering the period from 1995 to 2022. Secondary data were sourced from the Central Bank of Nigeria's statistical Bulletin. The Model was formulated, and data were analyzed using multivariate ordinary least squares (OLS) regression. A preliminary test was conducted using descriptive statistics and correlation analysis. The regression result shows that the primary mortgage institutions' loans have a positive and significant effect on housing delivery, while primary mortgage institutions' (PMIs) deposits and investments have a negative and insignificant effect on housing delivery. The result further reveals that the cost of building exerts a negative and significant effect on housing delivery. The study recommends that PMIs should increase their loanable funds for the construction of both residential and commercial houses for them to continue to improve their impact on the provision of housing in Nigeria. Also, PMIs should increase their investment in physical infrastructure and associated facilities of buildings, instead of investing in assets and securities that PMIs may engage in with their surplus funds.

Keywords: Housing Problems, Housing Development, Mortgage-Backed Security, Primary Mortgage Institution, investments

JEL Classification: G21, R31, O16, E44, R38, C32

1. Introduction

Housing is one of the necessities of life. Indeed, the housing sector plays a very critical role in a country's prosperity as it directly affects not only the well-being of the citizenry but also the general performance of other sectors of the economy. Thus, provision of housing has, since the early 1970s, engaged the attention of most countries, especially the developing ones, for some reasons. First, it is one of the three most important basic needs of mankind. Consequently, programmes of assistance in the areas of finance, provision of infrastructure, and research have been designed by governments to enhance adequate housing delivery. The focus on finance has, however, been very prominent for the reason that housing provision requires huge capital outlay, which is often beyond the capacity of the middle-income and low-income groups.

Secondly, modern urbanization further exerts pressure on the government to develop the housing market. Thus, it is mostly the case that the demand for housing units outweighs the supply. To address this gap or deficit in housing, individuals, firms, and governments often resort to sharing, renting or owning properties. In advanced economies, the common approach to owning a property is through a mortgage arrangement. In fact, in most cases, outright payment of cash to purchase a property raises suspicions. Although mortgage risks are well known and outlined in the literature, mortgage confers advantages ranging from living in a dream

house in the early years of one's life to offering the potential for profit-making when house prices rise.

Thirdly, mortgage finance plays a pivotal role in the development of housing markets. The spill-over effect of strong housing markets in the form of job creation, especially in the construction sector, improvement in living conditions, potential development of the long-term finance market for infrastructure development, freeing up of government resources to meet other socio-economic needs, and, ultimately, improved economic growth, is well documented in the literature.

In a bid to further improve the housing sector in Nigeria, governments at both federal and state levels have implemented various policies either through direct measures or agencies and parastatals. However, with all the progress being made by both the government and the organized private sector to provide affordable housing, the potential of mortgage backed security as an option for solving the Nigerian housing problem remains untapped. This study therefore examines mortgage backed security as an option for solving housing problems in Nigeria.

Housing delivery has posed as a challenge since the 1990s to most developing countries despite the efforts of all stakeholders, including the government agencies, planners, and developers, to provide necessary plans for solving the housing problem, a reason not far from overpopulation in the urban areas due to the search for employment opportunities, which has led to overcrowding. The number of research studies conducted in this area is few, and no consensus is found among them. The research conducted within the same country, incorporating almost the same variables but different industries, has come up with somewhat different results. Therefore, this research work has chosen primary mortgage institutions, a company that deals mostly in housing loans, to identify how it affects housing delivery in Nigeria.

The paper is structured into five sections. Following the introduction is Section II, which deals with the conceptual issues and literature review, Section III provides an overview of mortgage financing in Nigeria, while Section IV appraises mortgage financing in Nigeria. Section V articulates various issues and challenges in the mortgage sector. Section VI concludes the paper and provides some recommendations.

2. Literature Review

2.1 Conceptual Issues

Housing

Housing is a word that is common to many societies but most widely misunderstood especially its technical definition or meaning. Housing is therefore viewed not only as a matter of shelter together with its supporting infrastructures but more comprehensively as an evolutionary and participating process is a complex system of interactions between institutions and residents which give shape to human settlements. Breaking it down, Housing comprises more than four walls and a roof, it also includes supporting infrastructure such as water supply, electric power roads, shopping facilities, recreational facilities, a good and enabling environment. Furthermore, institutions such as the housing corporations, mortgage financial institutions, developers, estate agents, buyers and sellers all make up the housing industry. Housing affects all individuals in any society including the homeless and the destitute. Housing can also be described as accommodation with all the necessary ancillary services with it. Housing is a process and product as well as an asset and a service.

Mandelker and Motgomery (1973), described housing as a product and a process. As a product, housing refers to the end product of the construction work in terms of structure, design, space, lighting, heating, sanitary facilities, as well as other conveniences. Also, as a product, it is a product provided to satisfy shelter services and related needs. On the other hand, as a process, housing involves construction, neighbourhood planning, urban and regional planning, as well as environmental management. Williams (2007) refers to housing as a dwelling place, constructed as a home for one or more persons.

Housing Deficit

According to the Collins English dictionary, housing deficit is a deficiency or lack in the number of houses needed to accommodate the population of an area. Housing deficit refers to the number of shelters that do not have adequate conditions to be habitable, plus the

number of housing units that need to be built to shelter all families who currently lack one and, as a result, share a shelter with another household in overcrowded conditions (Carols, 2012). Housing deficit is the difference between the number of houses available (that is, the supply of housing) and the total number of houses needed (i.e., the demand) for houses in an economy. When the demand for housing is greater than the supply of houses in an economy, we say there is a housing deficit. It can also be measured as the difference between the number of households and the number of permanent dwellings. The deficit can be estimated for a given period of time (flow), for example, an annual deficit, or it can be at a given date in which case it is sometimes referred to as housing backlog (stock). It has been estimated that 75.0 per cent of the housing deficit in Nigeria is concentrated in families earning less than three times the minimum wage (World Bank 2013).

Current Level of Housing Deficit in Nigeria

Currently, most developing countries in the world are experiencing a huge deficit in decent and affordable shelter for their citizens. Housing shortages or deficits are mostly a concern of the middle- or low-income groups. According to the World Bank (2010), this is a result of rapid population growth, increased urbanization, high income inequality, and displacement of people by conflicts and disasters. According to the Federal Mortgage Bank of Nigeria (2007), there are about 10.7 million houses in Nigeria. Regardless of the policies, institutions and regulations which the Nigerian government has put in place since independence in 1960, there is still a dearth of housing, especially for the low-income segment. The housing backlog is estimated at 14 million units, Reports to the Presidential Technical Committee on Urban Development and Housing (RIRFHUD, 2009), which will require N49 trillion ($326 billion) to bridge the housing deficit of 14 million units based on an estimated average cost of N3.5 million ($23,333) per housing unit. Table 1 shows the housing deficit of six randomly selected African countries, including Nigeria.

Table 1: Housing Deficit of Six Selected African countries

S/N	COUNTRY	YEAR	ESTIMATED POPULATION (2016 - 2019)	ESTIMATED HOUSING DEFECIT (2019)
1	NIGERIA	2016 - 2019	185 -200 million	18 - 22 million unit
2	GHANA	2016 - 2019	28-30 million	1.7-2.6 million unit
3	KENYA	2016 - 2019	45 - 52 million	2 million unit
4	UGANDA	2016 - 2019	37 - 43 million	1.7 – 2 million unit
5	SOUTH AFRICA	2016 - 2019	56 - 58 million	2.5 million unit
6	ETHIOPIA	2016 - 2019	98 - 103 million	1.2 million unit

Source: Affordable Housing Investment Summit (2019).

The above data reflects the urgent need to craft better strategies for better housing delivery in Nigeria to stem the rising trend of housing deficit. Models of housing delivery from developed countries can be adopted with varying levels of modification to suit the existing political and economic situations of the country. Nigeria's housing deficit trend between 1991 till date is graphically represented in Table 2, which shows the estimated housing deficit and causes.

Table 2: Trend in Nigeria's Housing Deficit [1991-2019]

YEAR	HOUSING DEFICIT	POPULATION	CAUSE
1991-1993	4 – 7 million	104 million	Mortgage inefficiency
2007	8 – 10 million	145 million	Slum Demolition and Urban Migration
2013-2015	16 – 17 million	178 million	Overpopulation urban expansion, and increased poverty
2017-2019	18 – 22 million	184 million	Increased poverty, overpopulation and urban migration

Source: Affordable Housing Investment Summit (2019).

The implications of this very high housing deficit is that tenants in rented apartments pay as high as 60 per cent of their average disposable income, far higher than the 20-30 per cent, recommended by the United Nations. A World Bank study projects that the cost of bridging this 20 million housing deficit is N59.5 trillion, indicating the vast and untapped investment potential of Nigeria's real estate sector.

Currently, Nigeria's housing and construction sector accounts for only 3.1 per cent of GDP, while the total current housing production is at about 100,000 units per year, which is grossly inadequate for a country of nearly 200 million people. Therefore, we need at least about 1,000,000 additional units each year to have a chance of bridging this huge gap.

The rapid population increase and rural to urban migration have contributed to the shortfall of housing in Nigerian urban centers. The unresolved tenure arrangements, cost of building materials, access to infrastructure, deficiency of housing finance arrangements, stringent loan conditions from mortgage banks, time to process legal documents and inadequate government housing policies are also major issues affecting housing delivery in Nigeria.

Housing Problems

This refers to the degree of housing stress. The housing problem is peculiar to both rich and poor nations as well as developed and developing countries. Certain problems are associated with housing worldwide. They include shortage of housing (qualitatively and quantitatively), homelessness, government short-sightedness about the needs of the people, access to building land, house cost in relation to specification and space standard, as well as high interest rate of home loans. The reasons for shortage of housing in Nigeria include poverty, high rate of urbanization, high cost of building materials, as well as rudimentary technology of building houses.

Kabir (2004) posited that although the federal and some state governments intervened by providing mass housing, only the rich and the privileged can afford it. He submitted that the intervention of the government includes the formation of federal housing authority, the establishment of the Federal Mortgage Bank of Nigeria, as well as the creation of the Ministry of Housing, Urban Development and Environment. Nevertheless, he opined that in spite of the government's effort to tackle the housing problems, the Nigerian housing situation is still in crisis, and sustainable housing delivery has been seriously hampered.

Indicators of Housing Stress

These include: The distribution of infrastructure, Access to public transport, Employment, Shopping facilities, Schools and health facilities, Age and condition of dwellings, Residential densities and occupancy rates. Housing stress becomes obvious when many households live in a room apartment and a sizable percentage of dwellers are without essential facilities. This is when the occupancy ratio is unnecessarily high and above the acceptable standard for dwellers.

Housing Problems in Nigeria

The housing problem is a universal phenomenon just as it abounds both in rural areas and urban centers in Nigeria. Osamwonyi (1988) identified finance, income, affordability and employment as major factors to the housing problem in Nigeria. The problem in the rural areas has to do with qualitative housing while the problems in the urban center are quantitative in nature. Housing problems in the rural areas are connected with qualitative deficiencies like place, degree of goodness and the value of the house. Wahab (1993) declared that rural housing is incomplete because social services cannot be adequately linked with them. He submitted further that the social services required with housing include electricity, water supply, as well as transportation facilities. All these are deficient in rural housing. On the other hand, urban housing problems include homelessness slum dwelling, squatting and overcrowding. High rate of urbanization, ever-increasing population of urban dwellers in conjunction with the increasing social expectations of the people are all responsible for housing problems in Nigeria.

Ibimilua and Ibimilua (2011) identified the problems of urbanization as inadequate housing, unplanned development, and improper maintenance of existing structures, aging, and absence of social infrastructure, waste management menace, crime, and health hazard. Additionally, the houses in the urban core areas are

characterized by inadequate infrastructural facilities, poor ventilation, non-availability of in-built toilet and kitchen, as well as poor refuse disposal system. Other problems that are associated with urban housing are lack of effective planning, development of shanty towns, and availability of dilapidated houses. Generally, housing in Nigeria is bombarded with problems like poverty, discrimination against the use of indigenous materials, ineffective housing finance, inadequate financial instrument for mobilization of funds, high cost of building materials shortage of infrastructural facilities, as well as the bureaucracies in land acquisition, processing of certificate of occupancy (C of O), and approval of building plans.

Other constraints to housing development, maintenance and delivery are lack of effective planning, ineffective government programmes and policies, uncontrolled private sector participation, weak institutional frameworks and poor research and development into housing. In addition to the earlier mentioned problems, Agbola (1998) submitted that housing is inextricably interrelated with broader issues of inflation, income policy, and a perplexing range of difficult social and economic trends. All these challenges culminated in the ever-increasing demand that cannot be met by supply.

A fundamental difficulty has been with ownership rights under the Land Use Act 1978, which vests ownership of all land to the Governors of each state and is a significant deterrent to housing and housing finance in Nigeria. Another challenge in delivering affordable housing to low and middle-income households is the affordability gap. This is defined as the difference between the required monthly mortgage repayments on the least expensive house, and the 33% (an industry standard as recommended by the International Labour Organization) that can be deducted from the total salary of a potential homeowner. The gap affects 52% of the population or 65 million households. While some households achieve affordability with supplementary, informal income, this is not counted in loan origination procedures. Other major factors affecting housing in Nigeria include limited access to finance; slow bureaucratic procedures; and the high cost of land registration.

Researches (Balchin, 1995; Onibokun, 1990; Baer, 1991; Mtafu, Siku & Diana 2011; Aribigbola, 2006; Kabir, 2004; Charles, 2003) have suggested that housing problems cannot be eradicated. Even the developed countries still have some pockets of homeless people. In Nigeria, the problems of squatting, forced eviction and homelessness are common phenomena in major urban centres like Lagos, Kano, Port Harcourt, Ibadan, Oweri and Kaduna. With a population of over 140 million people and over 35% living in the cities, the housing problem is very cumbersome. In fact, Falade (2007) projected that given an annual population increment of 2.8% and all other factors being equal, more than 62% will be living in urban centres in Nigeria by year 2020. Presently, urban centres are characterized by shortage of housing quantitatively, slum dwelling, squatter settlements, inadequate infrastructural amenities, squalor, overcrowding and generally poor living conditions. At the national level, housing is characterized by abandoned projects, non-implementation of housing policies and neglect of the poor. Other problems of housing delivery in Nigeria are connected with the imperfections in policy instruments and its implications. The problems can equally be traced to administrative bottlenecks, in housing delivery.

Key Issues/Challenges Affecting Affordable Housing Delivery in Nigeria

i. Paucity of Long-term Funds

Currently, the prime lending rate in the banking sector remains as high as 17.5 per cent (CIA World Fact book) and it is impossible to use such funds for housing development. It is pertinent to note that the government has realised this and is reviewing the entire process of accessing mortgages, so as to bring it within the reach of beneficiaries. Perceived risks, high costs of doing business and longer term returns create a situation where the affordable housing sector lands directly in competition with other types of real estate investments like commercial spaces, the luxury segment, and high-end housing, which are perceived to reap greater and faster benefits on investment.

ii. Housing Finance

The financing of housing development, like many other development issues faced by African countries,

including Nigeria, is quite challenging. This is mainly due to the lack of adequate conditions or resources to facilitate such financing. In fact, the housing finance market in Africa is exposed to several risks. Diamond and Lea (1995) classify these risks under six categories:

1. credit risk arising from the fact that the borrowers may fail to pay back their loans;
2. liquidity risk stemming from maturity mismatch;
3. cash flow risk—which includes interest rate, prepayment, inflation, and exchange rate risks— increases uncertainty about cash flows over time as the credit may be worth more or less over time;
4. agency risk or information asymmetry risk (moral hazard or adverse selection type of risks) that a divergence of interests will cause an intermediary to behave in a manner other than expected;
5. systemic risk, or the risk that a crisis at one institution or in a part of the system will affect the whole system; and
6. Political risk, which refers to uncertainty about adverse government action that can trigger the other risks.
7. The above risks are reflected by a very challenging environment characterized by weak legal frameworks and enforcement of property rights, by information asymmetry and credit risk, and by low levels of financial intermediation and a lack of long-term funding.

iii. Rural - Urban Migration/Urbanisation

This is the movement of people from rural areas to urban centers, causing a population explosion in such areas. Over the years, there has been rapid urbanisation in Nigeria. This has led to people settling in very unsanitary environments. Other key issues affecting housing delivery in Nigeria includes:

iv. Property Registration and Title Documentation
v. Land Use Act
vi. Infrastructural Inadequacy
vii. High Cost of Building Materials
viii. Enforcing Foreclosure
ix. Nigeria Tax System
x. Construction Methods
xi. Construction Permits Issue

Mortgage Backed Security as a Panacea for Solving Housing Related Problems in Nigeria

The need for housing in Nigeria is enormous and its delivery depends on linking the mortgage sector with the capital market. To increase housing stock in Nigeria, there is the need to link the mortgage sector to the capital market, which is what the mortgage backed security offers. A paradox of the housing finance system is that whereas it is a compelling user of Long-term funds, it relies largely on the mobilization of savings. A peculiar problem of this method of housing finance operation is term intermediation (maturity transformation) resulting from the mismatch of maturities between the liabilities (which are short term) and the loan assets (which are long term). Whereas the savings mobilized are typically of short tenor, the mortgage loan is repayable over several years (15 years or more). At any one time, the periodic repayments of the loans are inadequate for new loans and to meet maturing obligations to depositors.

The imperative need to “unlock” the capital that is tied down in the mortgage informed the emergence of the secondary mortgage market, which is one of the greatest contributions of the capital market to the housing finance system. Operating on the basic philosophy that the right of the mortgagee to receive the proceeds of the loan repayment is a tangible asset that is transferable, the emergence of the secondary mortgage market foreshadowed the concept of the securitization of mortgages.

By providing a framework for mortgages to be sold (either in whole or in part), the market facilitates liquidity of the mortgage Deed. The typical transaction is the transfer of the entire or part of the mortgage portfolio to a single institutional investor (e.g. financial institution, a life insurance company, or a pension fund) whose interest is largely in the security and regularity of investment income. The buyer may also refinance its purchase by issuing a debt instrument that is backed by the proceeds of the mortgages so purchased. This way, investors who are otherwise reluctant to be directly involved in the risk of mortgage lending are encouraged to “buy into existing mortgages” and even participate indirectly in the creation of new ones.

Mortgage Defined

A mortgage is a loan secured by the collateral of a specific real estate property and is a contractual agreement between the lender and the borrower, where the borrower pledges the property to the lender as security for the repayment of the loan through a series of payments. A mortgage is a loan for the purchase of real estate, with the same property serving as collateral. It is the most crucial means of financing real estate use by individuals, businesses, and government because it satisfies three major criteria –necessity, affordability, and leverage.

Mortgage Backed Security

The subsequent evolution of the Mortgage-Backed Security (MBS) within the framework of the secondary market further radicalized the mobilization of funds in a manner that enhances the potential for a continuous flow for mortgage lending operations. As its name connotes, the MBS is a negotiable instrument backed by mortgages. By packaging the outstanding principal loan on the Deed into small fractions, the lender is able to sell the mortgages to many purchasers. The practical implication is that the MBS is backed by proceeds of loan repayments on the underlying mortgages (i.e. included in the Deed). The actual security itself represents a fractional participation interest in the pool of underlying mortgages, and a purchaser or holder of the MBS coupon is entitled to regular payments proportionate to their investment in the mortgages.

Mortgage-backed securities (MBSs) are created when lenders originate loans in the mortgage market, instead of retaining them, sell them to Investors in the capital market. Originating consists of buying and selling individual mortgages, then pooling them into a homogenous group in the secondary mortgage market, and finally securitizing the pool by issuance of a covering security. They are pooled loans turned into securities, which are then marketable and sold to investors. They are mostly pass-through securities because the holder of an MBS certificate receives interest and principal on the mortgages on a monthly basis, unlike the annual and semi-annual interest payments and maturity payment of principal by bond. MBS provides capital to finance mortgages and thus increases liquidity.

The MBS momentously represent the complete integration of the housing finance market into the capital market. A near parallel in the stock market is a situation where a manufacturing company finances the expansion of its production through a bank loan, which it later refinances through the sale of shares in the company to the public; the shareholders become participants in the fortune of the company. The MBS has become a very significant part of the secondary mortgage market transactions. The mechanism permits the purchaser of the mortgage (or, indeed, the primary lender) to package the portfolio for sale to several purchasers in small portions. Each portion would represent a shareholding in the portfolio, with stated rights and other terms: the shareholding will be indicated on the coupon to be held by the owner, with the coupon as a marketable/negotiable instrument. Thus, rather than sell as a Whole Loan, a PMI may divide its mortgage portfolio of (say) Nl00 million into small units to be sold to investors for cash. Indeed, the purchaser of a whole or participation sale may, in turn, refinance it through the MBS mechanism.

Due to the small values of mortgages that may be involved from individual lenders, a general practice is for several lenders to collaborate for issuing a MBS or Mortgaged Backed Bond. This is done through a conduit company. A reason for this is that the mortgages may have different terms, the loan soundness may vary, and the integrity of the institutions may not be the same. The mortgages in the combined portfolios would be packaged to reflect their respective qualities and accordingly priced before being packaged for sale. The coupon will indicate the terms of the investment, which are generally:

i. Payments are (to be) made monthly to the buyer for interest (at Specified rates) and principal in proportion of the amount of purchase in guaranteed minimum amounts the technical term is pass-through payments (i.e., the payments are channeled straight to the buyer as and when due
ii. The seller is obliged to make payments regardless of whether or not the mortgagor makes the repayments timely (which compels the seller to ensure high collection efficiency).

iii. The buyers have the right to foreclose and sell the mortgage (or any mortgage in the portfolio) in case of default
iv. A regular update to the buyer must be provided by the seller on the performance of the mortgages, as market information

Although the sale of mortgages by way of MBS is no more than a variant of the participation sale, a practical advantage of securitization is that it provides a broader base of potential purchasers. Whereas the typical whole loan or participation sale is to one institutional investor, the sale through MBS is to several buyers in smaller bits; this makes it possible for small savers to buy into the mortgage as against the (sometimes miserly) interest on conventional savings.

An advantage of the MBS to the lenders is with regard to portfolio re-structuring. Just as there are advantages in selling at a discount, there are opportunities to sell at a premium. It enables them to put to work the capital tied down in the older, low yielding mortgages in their portfolios. The rationale may be simplified that, for example, if the current market rate is 11% whereas the average yield on the portfolio is 9%, the cost of 2% enables the seller to re-deploy the capital in new investment. On the other hand, higher yield mortgages may be sold at a premium when market interest rate is declining.

Housing Delivery

According to Nurul and Khadijah (2017), housing delivery can be described as a process whereby individuals or groups meet their basic accommodation needs to include suitable site selection, accessing financial support and cash flow design, development of the house itself, the negotiation process, as well as the purchasing and selling of such property. "Housing delivery is an interwoven activity consisting of designing several components, management of the design and land purchase, supply of required facilities to include electricity, all of which must be adequately provided to ensure that housing delivery meets its purpose. Lemo (2007), opined that the housing delivery is limited by a plethora of factors including lack of long term finance for construction, unfavorable mortgage system and laws high inflation translating into volatile increase in cost of building materials high interest rate on loans charged by financial institutions and poor savings culture by the citizens, all operating in the housing market serving as recipe for the poor performance of the housing market".

Institutional framework for housing delivery in Nigeria.

In housing delivery in the country, some institutions are involved. These institutions include: the federal, state, and local governments in Nigeria, the Federal Housing Authority, the federal mortgage banks, and the primary mortgage institution. The major functions of these institutions include policy formulation, implementation, coordination, and control, as well as the provision of a mechanism for fund sourcing and disbursement to the various beneficiaries in the real estate projects (Acha, 2007).

2.2 Empirical Review

Adetokun, Akinrandewo, Adegoke, and Abiola-Falemu, (2011) studied the performance of the national housing fund scheme in terms of housing delivery in Nigeria. The study adopted secondary data and employed the use of percentiles and t-test as well as Pearson product moment of correlation for the purpose of analysis. The result indicated that the primary mortgage institutions (PMIs) were not adequate in number and that there was a wide difference between the amounts the mortgagors actually applied for and the amount approved.

Ubom and Ubom (2014), examined the contributions of primary mortgage institutions (PMIs) to real estate development in Nigeria and to establish the relationship that exists between the investment and the loans granted by the PMIs and real estate development in Nigeria from 1992-2012. The desk, narrative and descriptive research designs were used and the data collected from existing documents and materials mainly from the central bank of Nigeria. They found that PMIs loan and investment were highly directed to the provision of commercial buildings at the detriment of the residential houses. It was also discovered that rigid regulatory policies and insufficient funds hinder the smooth operations of the PMIs and their contribution to real estate development in the economy.

The impact of mortgage financing and housing development in Nigeria was investigated by Udoka and

Kpataene (2014). Data from the national bureau of statistics and the CBN statistical bulletin were taken from 1990 to 2014. By using the Granger causality test, the Error Correction Model was able to identify causal relationships and dynamic interactions between variables.

Nwakwo (2014) assessed how mortgage finance affected housing across Nigeria. Regression analysis and quantitative data were employed in the paper to evaluate the hypothesis. The study's findings showed that by 2020, private sector investment, commercial bank loans, and mortgage loans would have significantly and favourably impacted everyone's access to housing. Stated differently, the study found that by 2020, mortgage financing had a major and favourable influence on the availability of housing in Nigeria for all. This suggests that the goal of providing generic housing for the public has not yet been achieved by mortgage financing.

Agbada and Ekakite-Emonena (2016) studied primary mortgage institutions' fundamental and gross domestic product increase in Nigeria. The underlying principles guiding PMI operations were made up of deposit acceptance, mortgage finance and investment. In view of that, PMI deposit, PMI loan and PMI investment constituted the independent variables, while the GDP became the dependent variable. Relevant data used for analysis were obtained from the statistical bulletin of the CBN, and analyzed employing multiple regression methods. The findings revealed that the co-efficient of t-test parameters were low, showing that the impact of independent variables on GDP was of little importance, implying that their contributions to GDP were non-significant during the sampled period.

Udeji and Effiong (2018), evaluated the impact of primary mortgage institutions on real estate development in Nigeria. Specifically, the work sought to assess the role of primary mortgage institutions in housing delivery in the country and to establish the relationship that exists between the investment and loans granted by the PMIs and real estate development in Nigeria from 1990-2016.

3. Methodology

This study used the longitudinal research design because the variables under consideration have manifested and were sourced for a period of time. The scope of this study covers the effect of primary mortgage institutions on housing delivery in Nigeria from 1995 to 2022. Only secondary time series data are used in this study, and the variables required are housing stock, primary mortgage institution loan, primary mortgage institution investment, primary mortgage institution deposit, and cost of building. These data are sourced from the Central Bank of Nigeria (CBN) statistical bulletin (2022).

3.1 Theoretical Framework

This study is based on the title theory of mortgage. The basic assumption of the title theory of mortgage is that the deed of property does not stay with the mortgagor (borrower or buyer) until the mortgage loan is repaid Nwakwo (2014). According to the title theory of mortgage, a contract between a lender and a borrower transfer's ownership of the borrower's property to an impartial third person, referred to as a trustee, who guarantees the borrower will return the loan. In the event that an overdue mortgage obligation is not paid, the borrower runs the risk of losing title to their property through legal action or trustee-initiated foreclosure. The trustee derives authority from the deed (a signed document that specifies a change in ownership of a property) to sell the property and pay the lender his/her due foreclosure proceeding is enforceable under title theory unlike the lien theory since right of ownership to property does not reside with the buyer or borrower before full payment is made.

3.2 Model Specification.

The baseline model in this work is patterned after the model used by Udoka and Owor (2017) in a study that examined the effect of mortgage financing on housing development in Nigeria. The authors' regressed housing stock against the variables that proxied mortgage financing. The model is presented in this form:

HOSTK = f(PMIL, PMIIV, PMID, COB)

$HOSTK = P_o+P_1MILOL+ P_2PMIIV+P_3IPMID+ P_4PCOSB + pt.$ (1)

HOSTK means housing stock, PMIL is primary mortgage institution loan, PMIIV is primary mortgage institution investment, PMID is primary mortgage institution deposit and COSB denotes cost of building.

P_0 is constant, $P_1 - P_4$ denote coefficients of primary mortgage:
PMIL = Primary mortgage institution loan
PMIIV = Primary mortgage institution investment
PMID = Primary mortgage institution deposit
COSB = Cost of Building
B_0 = intercept parameter which is autonomous.
Where $\beta_1,\beta_2,\beta_3,\beta_4$ are regression parameters to be estimated.
μ = is the error term.
The a priori expectation is;
$\beta_1,\beta_2,\beta_3,\beta_4,\beta_5>0$

3.3 Measurement of Variables

Table 3: Measurement of Variables

Variable	Item	Abbreviation	Measurement	Previous Researcher that utilize the variable
Dependent	Housing stock	HOSTK	The total number of houses and apartments in Nigeria	Popoola & Alamu (2016)
Independent Variable	Primary mortgage institution loan	PMIL	Total loans disbursed by primary mortgage institutions.	Oyedokun, Adewusi, Oletubo, & Thomas (2013)
Independent Variable	Primary mortgage institution investment	PMIIV	Sum total of the portfolio of investment by primary mortgage institution	Ubom & Ubom (2014)
Independent Variable	Primary mortgage institution deposit	PMID	Aggregate of funds held by primary mortgage institutions as deposit	Udoka & Owor (2017)
Independent Variable	Cost of building	COSB	Total cost of building	Udoka & Owor (2017)

Source: Author's compilation (2024).

3.4 Method of Data Analysis

The impact of primary mortgage institutions on housing delivery in Nigeria will be investigated, and the empirical model will be analysed, using the ordinary least squares (OLS) econometric technique. The model's goodness of fit will be evaluated using the R-squared. Additionally, the combined statistical significance of the explanatory variables on the dependent variable will be tested using F-statistics. Lastly, in order to determine if positive serial correlation exists or not, an econometric criterion will be required. Durbin Watson statistics are used as the measurement tool for this. The years 1995–2022 will be covered by the econometric analysis.

3.3.1 Dependent Variables

Housing delivery was chosen as the dependent variable in the course of this study. Housing stock will be used as a proxy of the dependent variable housing delivery.

3.3.2Predictors/Explanatory/Independent Variables

Primary mortgage institution asset (PMIA), Primary mortgage institution loan (PMIL), Primary mortgage institution number (PMIN), Primary mortgage institution investment (PMIIV), Primary mortgage institution deposit (PMID) and cost of building (COSB).

The measurements and operationalization of all the variables of the study are presented below:

4. Results and Discussion

The data utilised for the empirical assessment of the primary mortgage institution's impact on housing delivery in Nigeria is presented and analysed in this chapter. Both statistical and econometric techniques are used in the study to create a rich backdrop for the research. Descriptive statistics and correlation analysis are the statistical methods used. The first description of the data is provided by these statistics. To quickly ascertain the impact of independent factors on the dependent variable for the econometric analysis, the empirical model derived from the panel data is

estimated using the ordinary least squares (OLS) technique.

4.1 Descriptive Statistics

Table 4 gives a descriptive summary of the dependent variable (housing delivery) and independent variables (PMIL, PMIIV, PMID and COSB) in Nigeria from 28 observations covering 1995 – 2022 (28 years period).

Table 4: Descriptive Statistics

	HOSTK	PMIL	PMIIV	PMID	COSB
Mean	85138.41	55636.29	33182.21	70637.43	380249.6
Median	87845.00	10228.00	24785.00	65311.00	252000.0
Maximum	140456.0	158203.0	149094.0	186946.0	950000.0
Minimum	173.6000	209.0000	612.0000	1044.000	100500.0
Std. Dev.	37355.83	62392.47	37665.01	65236.71	272488.8
Skewness	-0.414346	0.463217	1.355403	0.419586	0.919483
Kurtosis	2.790256	1.467447	4.402798	1.746423	2.273145
Jarque-Bera	0.852508	3.741499	10.86903	2.654945	4.561795
Probability	0.652950	0.154008	0.004363	0.265147	0.102192
Sum	2383876.	1557816.	929102.0	1977848.	10646990
Sum Sq. Dev.	3.77E+10	1.05E+11	3.83E+10	1.15E+11	2.00E+12
Observations	28	28	28	28	28

Source: Results extracted from E-views 9.0 Output, (2024).

An examination of the descriptive statistics in Table 4 for the dependent and independent variables reveals several issues. Housing delivery (HOSTK) which is the dependent variable has a mean value of 85138.41 and a standard deviation of 37355.83. This shows that the discrepancies from the mean for the dependent variable is very high and suggests that HOSTK over the years exhibits a high deviation from the mean. The variables varied from each other significantly over the studied period as seen in their corresponding minimum and maximum value of 173.6000 and 173.6000 respectively. The kurtosis which indicates the peakedness or flatness of the distribution of the series stood at 1.296591 with a negative skewness. Thus, the kurtosis value is less than 3 showing evidence of platykurtosis. The Jargue-Bera statistics of 0.852508 with P- value of 0.65 is not statistically significant at 5% level, an indication that the variable was normally distributed.

For the independent variables, the results indicate that the mean values for PMIs loans (PMIL), PMIs investment (PMIIV), PMIs deposits (PMID) and cost of building (COSB) are 55636.29, 33182.21, 70637.43 and 380249.6 respectively while their respective standard deviation are 62392.47, 37665.01, 65236.71 and 272488.8. This shows that the discrepancies from the mean for all the independent variables are not too large. This suggests that the variables over the years exhibit a low deviation from the means. The skewness value for all the independent variables is positive while the kurtosis values are less than 3 (except for PMIIV), implying that PMIL, PMID and COSB are platykurtic while PMIIV is leptokurtic. All the independent variables (except PMIIV) Jarque-Bera are greater than (>) 5 and statistically insignificant. This shows that these variables are normally distributed while PMIIV is statistically significant, hence not normally distributed.

4.2 Correlation Matrix

When conducting econometric analysis, it is crucial to make sure that the explanatory variables in the models do not have severe correlation patterns. Additionally, it is critical to do a preliminary analysis of the correlations between the study's variables. These examinations are carried out using the Pearson correlation analysis. The degree of a linear relationship between the dependent variable and the explanatory variables is gauged by the Pearson correlation coefficient. The stronger the correlation between the variables, by definition, the closer the coefficient is to 1. Table 5 presents the findings from the correlation tests.

Table 5: Pearson Correlation Statistics

	HOSTK	PMIL	PMIIV	PMID	COSB
HOSTK	1.000000				
PMIL	0.613252	1.000000			
PMIIV	0.201668	0.519886	1.000000		
PMID	0.404942	0.786692	0.886089	1.000000	
COSB	-0.446278	-0.383140	-0.503151	-0.580179	1.000000

Source: Results extracted from E-views 8.0 Output, (2024).

Table 5 shows the Pearson Correlation coefficient matrix which indicates the strength of linear relationship between HOSTK and its explanatory variables, namely PMIs loans (PMIL), PMIs investment (PMIIV), PMIs deposits (PMID) and cost of building (COSB). The correlation coefficient between HOSTK and PMIs Loans (PMIL) stood at .613252, representing 61.32% association; HOSTK and PMIs Investment (PMIIV) is .201668, representing 20.16% association; HOSTK and PMIs Deposits (PMID) is .404942, representing 40.49% association and cost of building (COSB) is -.446278, representing -44.62% associations.

On the association among the independent variables, we can observe that a positive correlation exists between all the PMIs variables while the correlation between cost of building and the PMIs variables were negative. The strength of association exhibited by these variables attests to the fact that none of the variables is strongly correlated since none of the correlation values exceeded 0.90 percent or had perfect correlation and this suggests the absence of multicollinearity. Hence, the variables are appropriate for conducting regression analysis.

4.3 Ordinary Least Square (OLS) Regression Estimation

The ordinary least squares (OLS) regression results for the time series data of 28-years range, is shown in Table 6

Table 6: Ordinary Least Square (OLS) Regression Result

Dependent Variable	Independent Variables	Coefficient	t-Statistic	Probability
HOSTK	C	98601.44	6.081465	0.0000
	PMIL	0.507015	2.729662	0.0119*
	PMIIV	-0.011949	-0.029462	0.9768
	PMID	-0.280333	-0.817837	0.4218
	COSB	-0.056471	-2.230067	0.0358**
R^2	0.502476			
Adjusted R^2	0.415950			
F-statistic	5.807233	Prob(F-stat)	0.002211	
Durbin-Watson	1.647252			

** and ** = 1% Level of Significance*

Source: Results Extracted from E-VIEWS 8.0 output, (2024).

Table 6 reports the multivariate regression using Ordinary Least Squares (OLS) technique. The R^2 of 0.502476 indicates that about 50% of total variation in the dependent variable (HOSTK) is accounted for by the explanatory variables (i.e., PMIL, PMID, PMIIV and COSB). This result remains robust even after adjusting for the degrees of freedom (df) as indicated by the value of adjusted R^2, which is 0.415950 (i.e. $\approx$ 41%). Thus, the regression has a good fit. The F-statistic, which is a test of explanatory power of the model is 5.80 with the corresponding probability value of 0.0022, is statistically significant at 1% level. Therefore, this implies that the four explanatory variables (PMIL, PMIIV, PMID and COSB) have joint significant effect on the housing delivery in Nigeria using housing stock

as a proxy. The Durbin-Watson statistic of 1.64 indicates we can completely rule out autocorrelation.
The results show that the PMIs Loans (PMIL) coefficient is positive and statistically significant at 1%, with a corresponding probability value of 0.0022 and a t-statistic of 2.729662. Given that the p-value is more than 5% (0.9768) and the coefficient is negative (-0.011949), PMIIV and HOSTK have a negative and non-statistically significant association. Given that the p-value is higher than 5% (0.4218) and the coefficient is negative (-0.817837), PMID and HOSTK have a negative but not statistically significant connection. Given that the p-value is less than 5% (0.0358) and the coefficient is negative (-2.230067), PMID and HOSTK have a statistically significant negative connection.

4.4 Discussion of Findings and Policy Implications

The results from the empirical analysis show that individually the explanatory variables have different degree of influence on housing delivery and have vital policy implications. First, the empirical results show that primary mortgage institution loans (PMIL) was statistically significant at the 1% level and displayed a positive sign. The implication of this finding is that PMIs loans have a meaningful effect on housing delivery in Nigeria. By this, a unit increase in PMIs Loans improves the level of housing delivery (HOSTK) by 0.50 units. This, therefore, indicates that PMIs loans have played a pivotal role in housing delivery in Nigeria. The positive relationship between primary mortgage institution loans and housing delivery is in line with a priori expectation. The implication of this finding is that primary mortgage institution loans have increased the number of houses constructed in Nigeria and hence improve housing delivery in Nigeria. This finding is consistent with Yinusa, Ilo and Elumah, (2017) who found a positive and significant relationship between PMIs loans and housing development in Nigeria.

Second, the relationship between PMIs investment and housing delivery is negative contrary to a priori expectation. By this, a unit increase in PMIs investment reduces the level of housing delivery (HOSTK) by -0.011949 units. Also, PMIs investment has no significant effect on housing delivery. This implies that PMIs investment have not played a critical role in the delivery of housing in the Nigerian economy. The likely reason for this is that PMIs investments are highly directed to the provision of commercial buildings at the detriment of the residential houses.

Third, the relationship between PMIs deposit and housing delivery is negative contrary to a priori expectation. By this, a unit increase in PMIs investment reduces the level of housing delivery (HOSTK) by -0.280333 units. Also, PMIs deposit has no significant effect on housing delivery. This implies that PMIs deposits have not played a key role in housing delivery in Nigeria.

Finally, in terms of the control variable, which is cost of building, the empirical result revealed that cost of building has a negative and significant effect on housing delivery. The import of this result is that a unit increase in cost of building reduces housing delivery (HOSTK) by -0.056471 units. This means, increasing the cost of building will be detrimental to housing delivery.

5. Conclusion and Recommendations

In this study, the effect of primary mortgage institutions on housing delivery in Nigeria was investigated and the period of the study was from 1999-2022. Descriptive statistics, correlation analysis and multivariate ordinary least square (OLS) regression techniques were employed in the analysis. Overall, findings from the study suggest that primary mortgage institutions (PMIs loans) have a significant and positive effect on housing delivery in Nigeria. From the foregoing, the study concluded that primary mortgage institutions have played a key role in housing delivery in Nigeria.
Based on the empirical findings of this study, the following policy recommendations are suggested for policy action:

i. It is therefore required that PMIs should increase their loanable funds for construction of both residential and commercial in order for them to continue to improve their impact on provision of housing in Nigeria.
ii. PMIs should collaborate with holders of long term finance such as pension funds Administrators, insurance companies to ensure availability of long-term funds instead of

relying only on deposits which is not really long term funding.

iii. Adequate attention should be given to the socio-economics of the Nigerian populace to ensure easy access to primary mortgage institutions loan. Furthermore, land use regulations and difficult registration procedures be reviewed as these make the certificate of occupancy, a document required for mortgage lending excessively difficult to obtain.

iv. The government should intervene in the cost of building materials by regulating the prices of building materials in order to reverse its negative effect on housing delivery in Nigeria.

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