

Empirical Analysis of Primary Mortgage Institutions Fundamentals and Gross Domestic Product Increase in Nigeria

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Abstract

This study seeks to empirically analyze Primary Mortgage Institutions (PMIs) Fundamentals and Gross Domestic Product Increase; in other words, economic growth in Nigeria. The (PMIs) fundamentals in the new PMIs guidelines include Mortgage finance, Investments and Deposits taking. Thus, PMIs Loans, PMIs Investments and PMIs Deposits are adopted as the explanatory variables and served as proxies for PMIs fundamentals to explain Gross Domestic Products (GDP). Data used for empirical estimation were sourced from CBN statistical Bulletin, 2011 and 2013 and analyzed using Multiple Regression technique parameters. The research findings were robust. The statistical parameters exhibited high coefficients and the F-statistics which indicates the overall significance of the model stood at 75.23. These results led us to reject the null hypothesis and accept the alternate hypothesis that there is a strong relationship between GDP and PMIs Loans, PMIs Investments and PMIs Deposits. However, the coefficients of the t-test parameters were low indicating that the impact of the explanatory variables on GDP was very minimal, meaning that their contributions to GDP were not relevant. Conclusively, the results indicate that while there is a significant relationship between GDP and PMIs variables, the impact of these variables on GDP was not significant during the period under review. Thus, we recommend that relevant policies with capacity to boost the activities of PMIs for maximum productivity should be enacted by government regulatory agencies in order to re-equip the housing finance market and increase the ratio of mortgage finance as a percentage of GDP.

Keywords: Primary Mortgage Institutions (PMIs), PMIs Loans, PMIs Investments, PMIs Deposits, Gross Domestic Product, Nigeria.

1. Introduction

Gross Domestic Product (GDP) is one of the principal indicators used to gauge the health of a nation's economy, thus an increase in GDP constitutes economic growth. In the developed economies of the world, the housing market contributes efficiently to GDP. For instance, in the UK economy, housing market constitutes a vital engine for sustainable increases in real GDP. As a matter of fact, vibrant Mortgage Institutions activities, especially mortgage lending constitutes part of sustained positivity in emerging economies of the world. However, in Nigeria, the contributions of Primary Mortgage Institutions operations to GDP appeared obscured though their presence in the economy is prominent. LAMUDI is a global property portal focusing exclusively on emerging housing markets. The report of LAMUDI (2014), states that following the recapitalization exercise of the Primary Mortgage Institutions (PMIs) in the Nigeria, 36 mortgage firms have scaled the hurdle and now obtained the Central Bank of Nigeria's license to administer mortgage portfolio in Nigeria.

To ameliorate the consequences of the housing problem in Nigeria, the Federal government established Federal Mortgage Bank of Nigeria (FMBN) in 1977 to serve as the apex Mortgage institution in the country. The primary role of the FMBN was to provide finance for the housing sector. In order to complement the duties of FMBN, the Federal government in 1989 established Primary Mortgage institutions (PMIs) to serve as secondary housing finance institutions while FMBN role remains as the apex and regulatory body. In the 2010 banking reforms PMIs were

classified as specialized financial intermediaries set up primarily for the provision of mortgage finances for the construction of homes and other housing needs. Like other financial institutions, deposits are mobilized by PMIs, but unlike other financial institutions, these deposits are mainly channeled to a core area namely, mortgage finance and the excess funds are diversified to various forms of investments. Sanusi (2003) affirmed that PMIs, under the Decree were to mobilize savings from the public and grant housing loans to individuals, that PMIs were expected to enhance private sector participation in housing finance. Thus, the fundamental business areas of PMIs operations in Nigeria include Deposits taking, Mortgage finance and Investments. In this study, these core business areas constitute PMIs fundamentals – the basic and essential operational areas. It is against this backdrop that this study seeks to explore and analyze empirically Primary Mortgage Institutions (PMIs) fundamentals and Gross Domestic Product Increase in Nigeria. In other words, the study seeks to empirically evaluate what impact the basic and essential areas of PMIs operations made on the economy of the nation as per their contributions to GDP increase or economic growth during the period under review.

The Nigerian housing situation on which the growing population estimated to be over 150 million people depends is becoming increasingly worrisome. With the continuous drift of people to urban areas, coupled with increases in building materials, labour and housing accessories, demand pressure for housing has generated hike in rental fees and consequently creating residential crises for many Nigerians. BGL Research (2013) report revealed that an estimated 32 million households, over 50% of Nigerians are either homeless or live in inadequate shelter; that the colossal housing deficit in Nigeria has been estimated to require the entire federal government budget compounded for 10 years. Applying a mid-level unit price of N10 million per average house suggests a market size or required investment of between N50 trillion and N60 trillion. Globally, housing crises induces increases in mortgage financing and thus boost the intermediation and investments functions of PMIs. Increased activities of PMIs have the capacity to enhance the level of national Output thus GDP will be positively affected.

To fully comprehend the economic role of Primary Mortgage Institutions (PMIs) in sustainable economic growth, it is necessary to have a succinct discussion on the impact of mortgage finance on global economy to serve as a yardstick or standard of comparison. UN-HABITAT (2005) reported that the world's urban population will soon exceed its rural population, that in the next 25 years, over 2 billion people will add to the growing demand for housing, water supply, sanitation and other urban infrastructures and services. According to the report, what is critical when considering this number is that close to 3 billion people, or about 40% of the world's population by 2030, will need to have housing and basic infrastructural services. This translates into completing 96,150 housing units per day or 4000 per hour. Further, the report reveals that the UN Millennium Project estimates that to upgrade slums and meet Target 11 of the Millennium Development Goal on improving the lives of 100 million slum dwellers while also preventing the formation of new slums will require investing US\$4.2 billion per year over the period 2005 to 2020. Actualizing this target will result in an unprecedented economic growth at the global level in all developing regions of the world. Housing is becoming an increasingly expensive commodity in all countries of the world and this has had considerable implications for the success of mortgage mechanisms as a result of the desire for homeownership. According to UN-HABITAT (2005), the volume of mortgage loans in Europe at the end of 2003 was US\$3.4 trillion. It has now grown by leaps and bounds to constitute 42 percent of EU's GDP. As a matter of fact, the increase in mortgage lending has enhanced economic growth in the UK considerably and constitutes part of sustained positivity for the UK economy. Atsiya (2012) affirmed that mortgage financing is very significant in stimulating business activity in the housing sector of the economy.

Deposits are mobilized by PMIs in the form of Demand Deposit, Savings and other forms of Time deposits. These deposits constitute a large proportion of funds used for financing housing loans and investments. Mortgage financing is the core product of Mortgage banking; however, excess funds are invested in various financial assets and properties in the economy. On the other hand, the economy of a nation is measured by the nation's Output. Blanchard (2011) contends that Output can be measured as total income, or it can be viewed from the productive side and measured as the total value of final goods and services or the sum of all value added in the economy. Output is an important macroeconomic concept and it is measured by Gross Domestic Product (GDP). Succinctly, GDP is defined as the total worth estimated in currency values of a nation's production in a given year, including service sector, research, and development. That translates to a sum of all industrial production, work, sales, business and service sector activity in the country calculated over a period of one year. GDP can also be calculated on a per capita (or per person) basis to give a relative example of the economic development of nations. In this study therefore, the explanatory variables are deduced from the core areas of PMIs operations in Nigeria and these variables are: PMIs deposits, PMIs loans and PMIs investments. Gross Domestic Product (GDP), the indicator of Output level represents the explained variable and it is the proxy for Economic growth or GDP increase. The objective of this study is to empirically appraise Primary Mortgage Institutions (PMIs) fundamentals; the core operational areas namely; deposits taking, mortgage finance and investments with available official statistics and draw inferences on how they impacted on economic growth in Nigeria.

1.1 Hypotheses Formulation

For the purpose of the empirical analysis, a null hypothesis is formulated to reflect the relationship between the explained variable and the explanatory variables thus:

H₀₁; There is no relationship between PMIs deposits, PMIs loans, PMIs investments and Gross Domestic Product (GDP) in Nigeria.

The article is organized as follows: Section 1 contained the Introduction, Section 2 reviews the related literature, Section 3 discusses the methodology and empirical models employed in this study, Section 4 presents the data and analysis of results and Section 5 covers the discussion of findings, conclusions and recommendation with embedded policy implications.

2. Review of Related Literature

It is necessary to reiterate that the essential operational areas of Primary Mortgage Institutions (PMIs) focused on in this study are; Deposits taking, Mortgage finance and Investments. The study explored how these core operational areas of PMIs impacted on GDP in Nigeria during the period under review. Indeed, Primary Mortgage Institutions mobilize deposits into various accounts. The largest proportion of the deposits of PMIs is usually in the form of Savings deposits. Special products such as Children savings among others are introduced to boost deposit mobilization. For peasants in the rural areas, households and entrepreneurs whose activities heats up the economy, Savings deposits constitute their primary source of capital accumulation. According to Adebamowo, Oduwaye & Oduwaye, (2012), to enhance deposit mobilization many PMIs developed attractive products in addition to the National Housing Fund (NHF) loans which include: Estate development loan, Pension-linked loan, Social loan, et cetera. By accumulating capital, Savings deposit has positive relationship with Output level because the capital accumulated is utilized to boost economic activities. Quijano and Quijano (2003) averred that the amount of capital determines the amount of Output being produced; and in like manner, the amount of Output determines the amount of Savings and investments and so the amount of capital accumulated'. The amount of domestic Savings is a vital indicator of a buoyant economy. Obviously, the higher the amount of Savings mobilized, the higher the amount of funds available for granting loans and for investments in the other sector of the economy. Thus a high Savings ratio to GDP leads to economic growth, evidencing the fact that a high Savings level is positively correlated to Output level. The reason is deduced from the fact that the higher the Savings level, the higher the Capital accumulation and the more vibrant economic activities would be. Relatively the amount of Savings is a determining factor in the ability of banks to lend and finance mortgages to improve GDP levels and the housing situation respectively in order to strengthen the economy.

Another essential operational area of PMIs on which this research study is hinged is Mortgage finance. Mortgage finance is loan granted for the construction of homes and other housing needs. Sanusi (2003) averred that government policies aimed at providing affordable and comfortable housing for all Nigerians include Credit Policies in recognition of the importance of the Housing sector; that a major area of concern has been mortgage financing, considering that banks have ready access to cheap sources of funds through retail deposits, infrastructures to process real estate loans efficiently and the skills to manage the risks involved. Mortgage financing is an endogenous component of financial intermediation, the process whereby a financial intermediary such as a bank mobilizes deposits and transforms the mobilized deposits into interest bearing assets such as bank loans and overdraft. This implies that Mortgage finance as a component of financial intermediation process has the ability to revive and sustain a sound financial system. On the other hand, a sound financial system facilitates economic activities in all sectors and that culminates into increases in GDP. This no doubt explains why if special attention is focused on Mortgage finance by economic players, it has the potentials of generating positive impulses in all sectors of the economy. Sanusi (2003) contends that even non banking firms such as Insurance companies are equally well suited to providing housing finance because of the stable base of their funds and the long-term nature of their liabilities. For instance, funds from life insurance policies provide good resources for financing housing sector needs. Generally, the availability of credit funds drives the economy positively. According to Cappiello, Protopapa, Sørensen & Kadareja (2010), evaluating the effect of credit growth on Output (GDP) raises a number of issues. Bank lending leads to deposit money creation which in turn leads to increase in the supply of funds that constitutes additional source of financing for banks. Consequently, Output (GDP) will increase due to increase in economic activities brought about by lending. Driscoll (2004), posits that the supply of credit, both in terms of volumes and in terms of credit standards applied on loans to enterprises have significant effects on real economic activity. In other words, a positive change in loan availability has a positive and statistically significant effect on GDP.

Of the three essential areas of PMIs operations focused on in this study, Investment is the most volatile. Investment has been considered to be one of the best indicators of the direction of the economy of any nation. According to Duff (2014), there are two broad components of Investment that can be used in enhancing GDP increase by Mortgage institutions and these include: New residential construction and Business spending. Based on this premise, Investments with respect to PMIs' operations are viewed and discussed from following perspectives.

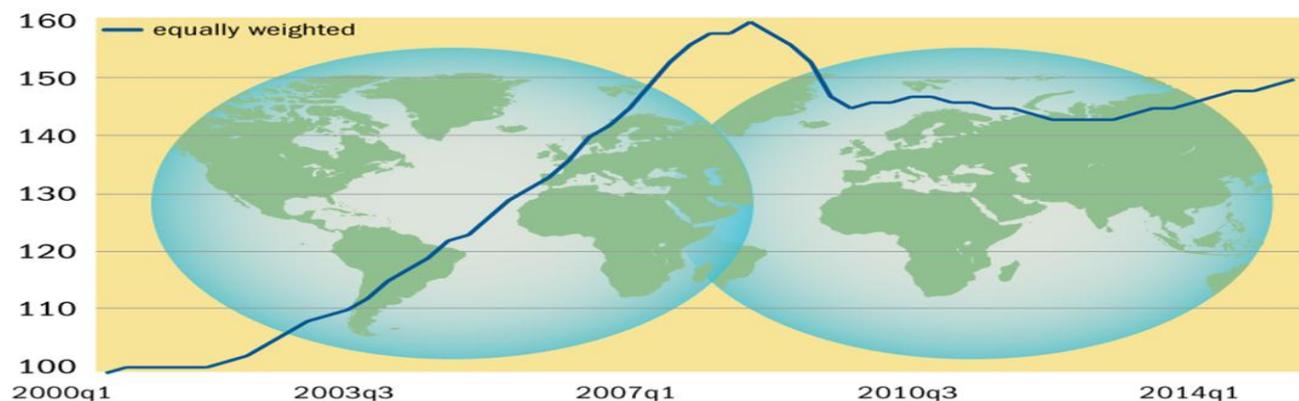
- a) Housing investment which generally refers to the activity of developing physical infrastructure, superstructure and related facilities of buildings and
- b) Investment in assets and securities that the PMIs may undertake with their excess funds.

In theoretical literatures of economic development, controversy exists as to whether there is a relationship between Housing investment and economic growth (GDP). However, Housing investment has increasingly been considered as having the potential to contribute to economic growth, not only because home building business has been found as major economic activity with large multiplier effects but also because improvement in housing has widely been associated with many external, social and economic benefits and advantages. Seen as the activity of developing physical infrastructure and related facilities of buildings, Housing investment helps to promote economic inclusion by creating jobs for craftsmen and artisans such as plumbers, welders, electricians, painters, et cetera. Kolawole (2015) opined that the housing sector is seen as an important sector for stimulating economic growth in most developed countries. Indeed, housing construction indices are some of the most common measures used by analysts to gauge economic trends in Organization for Economic Cooperation and Development (OECD) countries. However, Housing and Construction sector still accounts for only 3.1 percent of the GDP of Nigeria, Africa’s largest economy with a GDP of N80.3 trillion (\$510 billion) as at 2013. On the other hand, the business spending component of PMIs Investments includes investment transactions such as LPO financing, merchandising, property agency, investment in assets and securities that may be undertaking with their excess funds et cetera. Sanusi (2002), opined that the ‘availability of investible funds is a key factor in the growth process of any economy. While PMIs investment in new facilities and equipment is synonymous to investing in their production capacity, investment in securities raises profitability level and enhances production efficiency. Thus PMIs investments have the potential of increasing output levels in the economy. However, Kim (2004), argued that the relationship between residential investment and GDP in Korean is totally different from the above assertions and suggests that housing investment is not a driver of GDP but a follower of fluctuations of the Korean economy, while non-residential investment is found to be both a driver and a follower of macroeconomic fluctuations. This argument appears to suggest that the effect of housing investment on GDP may not be universal and may also depend on the viability of economy.

Though the study is focused on the Nigerian economy, housing problem which is the primary focus of PMIs is a global problem. Thus international evidences lending support to the fact that housing investments impact on economic growth positively abound. Hongyu, Park & Siqi (2002) investigated the Interaction between Housing Investment and Economic Growth in China and affirmed that commercial housing investment has reached a very high growth rate in recent years. The global outlook of house price index is depicted in figure 1 as put together by the combined efforts of Bank of

Global House Price Index

Global housing markets continue a slow recovery.



Sources: Bank of International Settlements, Colliers International, European Central Bank, Federal Reserve Bank of Dallas, Savills, and national sources.


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International Settlements, Colliers International, European Central Bank and Federal Reserve Bank of Dallas.

Figure 1. Global House Price Index

Source: Bank of International Settlements, Colliers International, European Central Bank and Federal Reserve Bank of Dallas.

According to Ahir, Bracke, Ambrogio, Prakash and Alessandro (2015), the Global House Price Index is a weighted average of real house prices in nearly 60 countries. The growth characteristic observed from figure 1 shows that the global house price index rose steadily from year 2000 and peaked in 2009, slowed down by 2010 and began to ascend gradually by 2014. It has risen up slowly during the past two years but has not yet returned to pre-crisis levels. A well-functioning housing sector is critical to the overall health of the economy because adequate housing finance has the ability to facilitate labour mobility within an economy and help economies adjust to adverse shocks. Zhu M (2014) argued that Housing finance plays key roles in the economy of nations since mortgage markets are important in the transmission of monetary policy.

Figure 2 shows the real Credit growth associated with house price changes in various economies of the world. According to Ahir, ct al (2015) the credit growth is associated with house price changes and it was strong in the first quarter of 2015 in many countries of the world.

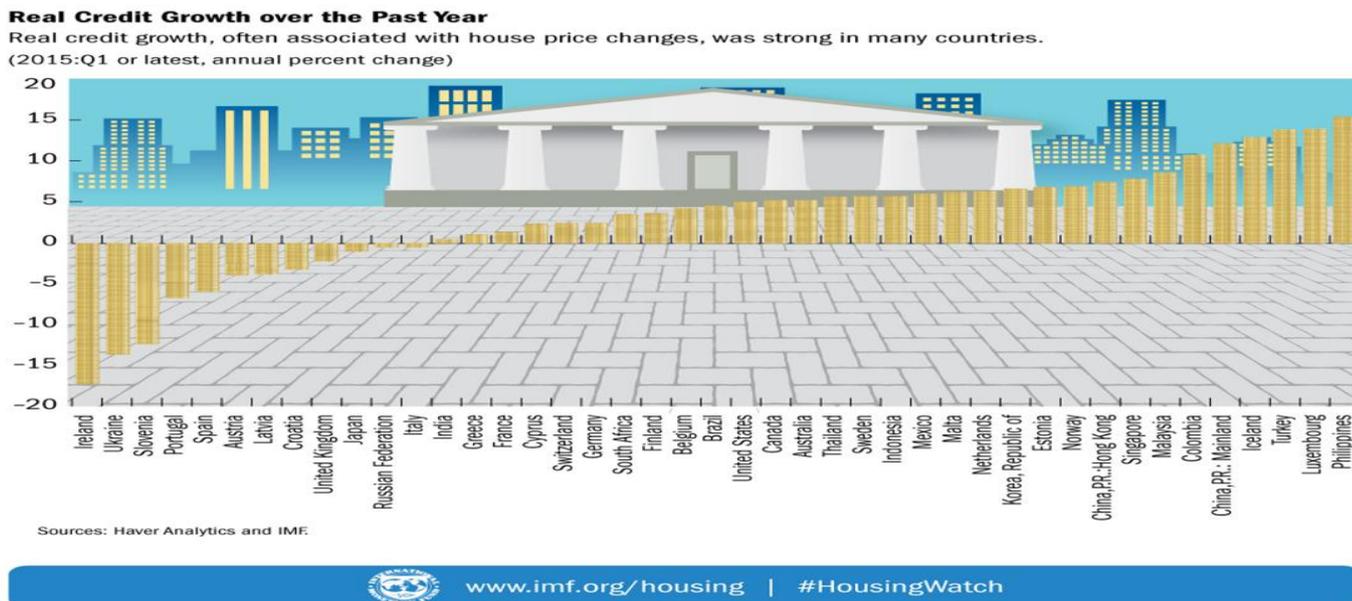


Figure 2. Real Credit Growth over the Past Year.

Source: Haver Analytics and IMF: (As depicted in Global Housing Watch, July 2015.)

Though Nigeria indices are not included in figure 2, may be, for reason of lack of reliable data, South Africa exhibited a relatively high increase in credit growth associated with house price changes in the first quarter of 2015. Certainly, these indices have strong implications for economic growth in the world economy. However, results of some research studies have cast doubts on the effect of housing investments on GDP. As an example, we reiterate Kim (2004) who argued that the relationship between residential investment and GDP in Korean is totally different and suggests that housing is not a driver of GDP but a follower of fluctuations of the Korean economy, while non-residential investment is found to be both a driver and a follower of macroeconomic fluctuations.

3. Research Methodology

3.1 Model Specification

In every economy, Primary Mortgage Institutions activities, especially deposit taking, lending and investments are essential economic factors and constitute part of the efforts employed to sustain positivity in an economy. It is against this backdrop that this study seeks to assess and explore Primary Mortgage Institutions (PMIs) fundamentals and Economic Growth in Nigeria. While PMIs Loans, PMIs Investments and PMIs Deposits serve as proxies for PMIs fundamentals, we employed Gross Domestic Products (GDP) as the proxy for GDP increase, otherwise referred to as economic growth. Data obtained are analyzed using Multiple Regression model derived from the following mathematical expression:

$$Y = f(X_1, X_2, X_3, \dots) \dots\dots\dots(Eqn 1)$$

Where: Y = Dependent variable (Gross Domestic Product) and

X₁, X₂, X₃ = Independent variables (PMI Loans, PMI Investments and PMI Deposits) respectively

Ojamieruaye and Oaikhenan (2001;53) posits that there exist a stochastic relationship between a variable Y and a set of

other variables: $X_1; X_2; \dots; X_k$; that Y referred to as the explained variable depends on other observed variables, $X_1; X_2; \dots; X_k$ known as the explanatory variables, and an unobserved error term usually denoted by ' μ ' signifying that the relationship between economic variables are basically not exact. Based on the foregoing theory and from equation 1, we deduced the econometric version of the Multiple Regression Model as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu \dots\dots\dots(\text{Eqn } 2)$$

Where: $Y =$ Gross Domestic Product (GDP)

$X_1, X_2, X_3,$ = PMIs Loans, PMIs Investments and PMIs Deposits respectively

β_0 = The intercept (Value of Y when all the independent variables assume zero as value.

$\beta_1; \beta_2; \beta_3$ = The coefficients of the independent variables of the model or slope coefficients

μ = Disturbance or error term.

Substituting for Y and X in equation 2, we specify below a model to link the dependent variable, Gross Domestic Product (GDP) and the independent variables, namely, PMIs Loans, PMIs Investments and PMIs Deposits as follows:

$$\text{GDP} = \beta_0 + \beta_1 \text{PMIL} + \beta_2 \text{PMII} + \beta_3 \text{PMID} + \mu \dots\dots\dots(\text{Eqn } 3)$$

Where: $\text{GDP} =$ Gross domestic product;

$\text{PMIL} =$ PMIs Loans; $\text{PMII} =$ PMIs Investments and $\text{PMID} =$ PMIs Deposits

Other parameters remain as in equation 2 above. However, the apriori expectations with respect to sign are:

$$\beta_0 > 0; \beta_1 > 0; \beta_2 > 0; \text{ and } \beta_3 > 0$$

4. Presentation of Data and Analysis of Empirical Results

4.1 Presentation of Data

The data for this research study were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin; Volume 22, 2011 and Volume 24, 2013. These data are displayed in table 4.1 in the appendix; however, for ease of understanding of trends in the growth rate of the variables over the period under investigation, the data are used to plot the graph in figure 4.1.

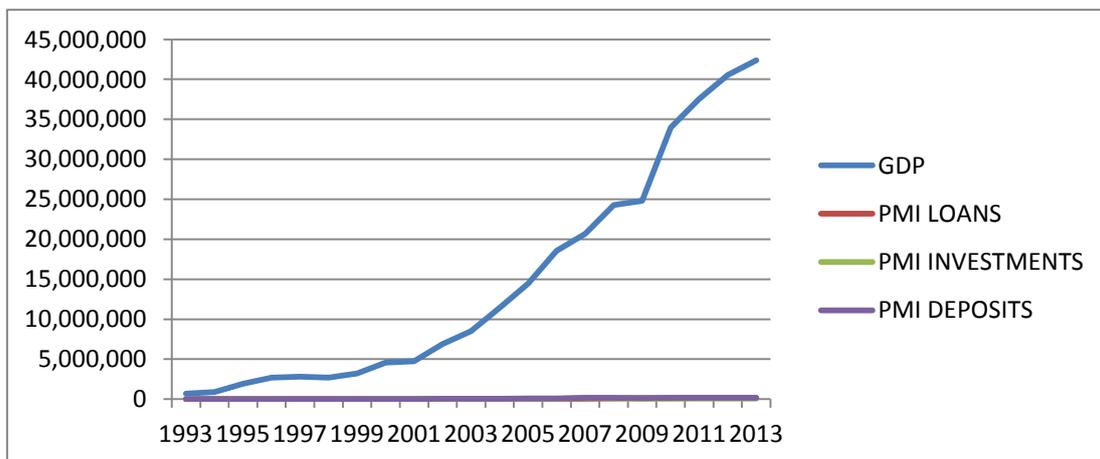


Figure 4.1 Graphic Representation of Data: GDP and the Explanatory Variables

Source: Researcher’s computation using sourced data, 2015.

Owing to the very large difference in the value of GDP data and its explanatory variables data, figure 4.1 appeared not to have displayed the growth characteristics of the explanatory variables to showcase how they stand out distinctly. While GDP at current basic prices peaked in 2013 at N42,396,800 million, PMIs Loans, PMIs Investments and

PMIs Deposits stood at N132,290 million, N83,340 million and N164,930 million respectively in the same year. Thus, while GDP line rose above the N40b line in the graph, the explanatory variables with figures below N0.150b crawled along the X-axis of the graph. The implication of these data values and growth trends is that Primary Mortgage Institutions activities were extremely low in Nigeria may not have impacted significantly on GDP increase and therefore may not be considered as being relevant to policy formulated to affect GDP.

The distinctive growth trends of the explanatory variables are clearly shown in figure 4.2. This is intended to explain the fact that though they all crawled along the X-axis in figure 4.1 the explanatory variables actually exhibited different growth characteristics over the period under review. From figure 2, we deduced that PMIs deposits grew faster from 2001, maintained the highest growth rate than PMI investments and PMIs loans, peaked at 2010 with figures standing at N186, 946 million; a negligible amount compared to GDP figure for the same year, thus affirming an insignificant relationship.

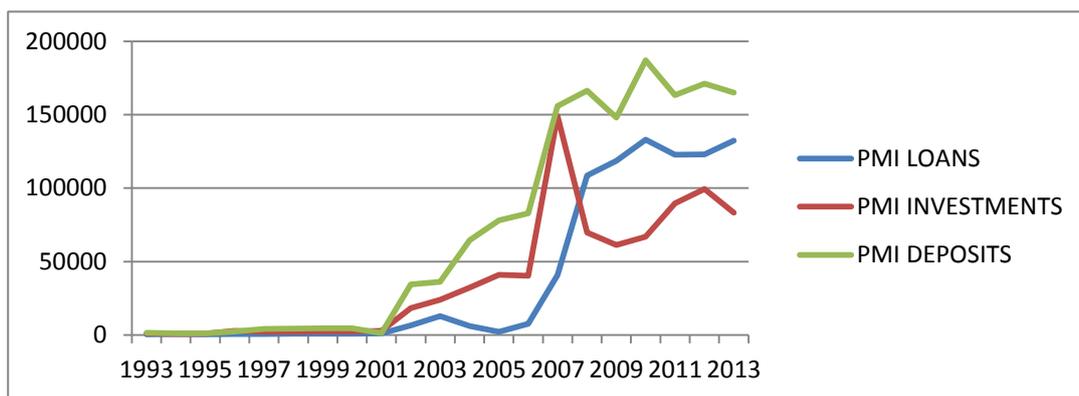


Figure 4.2 Graphic Representation of only the Explanatory Variables data.

Source: Researcher’s computation using sourced data, 2015.

4.2 Analysis of Empirical Results

For the purpose of our empirical analysis, we employed the following statistical parameters obtained from the regression estimation to make inferences and draw our conclusion.

- Pearson correlation coefficient.
- t-test coefficient of the independent variables
- Coefficient of determination, the adjusted R square (R²) and
- F-statistics of the Analysis of Variance (ANOVA)

4.2.1 Pearson Correlation Coefficient

The Pearson correlation coefficient serves to measure the strength of linear relationship between the dependent variable and its explanatory variables. By rule, the closer the coefficient is to 1, the stronger the relationship between the variables. Figure 4.2 shows the Pearson Correlation coefficient matrix which indicates the strength of linear relationship between GDP and its explanatory variables, namely PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID).

Table 4.2 Pearson Correlation Coefficient Matrix.

	GDP	PMIL	PMII	PMID
GDP	1			
PMIL	.929	1		
PMII	.840	.740	1	
PMID	.950	.912	.910	1

Source: Researcher’s computation using SPSS Statistics: 21; 2015

The Pearson correlation coefficient matrix on table 4.2 displays high coefficients indicating that there is strong linear relationship between GDP and its explanatory variables. The correlation coefficient between GDP and PMIs Loans

(PMIL) stood at .929, representing 92.90% relationship; GDP and PMIs Investments (PMII) is .840, representing 84.00% relationship and GDP and PMIs Deposits (PMID) is .950, representing 95.00% relationship. The strength of relationship exhibited by these variables attests to the fact that the explanatory variables have the potential to contribute immensely to GDP increase in Nigeria, though these potentials appeared not harnessed.

4.2.2 The t-test coefficient

The t-test coefficient indicates the slope gradient or the significance of individual explanatory variables. Table 4.3 shows the t-test coefficients of PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID) variables. All the explanatory variables exhibited positive coefficients. The positive signs conform to apriori expectation, meaning that the variables have the potential to impact positively on GDP. It means too that where PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID) are adequately provided for, they have the ability to cause increase in GDP.

Table 4.3 The t-test coefficients

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2559958.405	1295625.168		1.976	.064
1					
PMIL	105.247	47.802	.407	2.202	.041
PMII	22.995	60.759	.069	.378	.710
PMID	99.979	58.101	.516	1.721	.102

a. Dependent Variable: GDP

Source: Researcher's computation using SPSS Statistics: 21; 2015.

However, based on the empirical results, only PMI Loans (PMIL) with a coefficient of 2.202 passed the test of significance. According to Ojameruaye E.O and Oaikhenan (2001), by rule of thumb, a t-test coefficient of 2 and above passed the test of significance. Thus, based on the empirical results, only PMIs Loans (PMIL) can be said to be relevant to policies formulated to affect GDP.

Never-the-less, PMIs Investments (PMII) and PMIs Deposits (PMID) coefficients standing at .378 and 1.721 respectively exhibited positive signs which concur with apriori expectation. The positive signs concur with apriori expectation with regards to the fact that bank mobilized deposits are the major source of funds for granting loans and overdrafts to augment business working capital and bank investments have the potential of enhancing profitability. Increase in working capital of businesses and proceeds from investments of PMIs are ways of boosting GDP. However, based on the empirical findings, PMIs Investments (PMII) and PMIs Deposits (PMID) variables failed the test of statistical significance at 5% significant levels with coefficients of .378 and 1.721 respectively, thus casting doubts on their relevance to policies that are formulated to affect GDP.

4.2.3 Adjusted R square (R^2)

The adjusted R square (R^2) also referred to as the coefficient of determination is the test for the goodness of fit of the estimated regression line. Gujarati and Porter (2009) explained that R^2 is a summary measure that tells how well the sample regression line fits the data. It indicates the extent to which the variation in the dependent variable is explained by the regression plane, that is, by variation or changes in all the independent variables combined. The closer the R^2 is to 1 (one) the stronger is the explanatory power of the estimated regression line and thus, the closer are the observations to the line of good fit. In other words, the greater the value of R^2 , the greater the variation in the dependent variable explained by the independent variables.

Table 4.4 The adjusted R square (R^2)

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.962 ^a	.926	.914	4145311.983	.712

a. Predictors: (Constant), PMID, PMII, PMIL

b. Dependent Variable: GDP

Source: Researcher’s computation using SPSS Statistics: 21; 2015

Table 4.4 displays the Coefficient of determination, the adjusted R square (R^2) result of our empirical estimation. It indicates .914, meaning that the explanatory variables accounted for 91.40% of systematic variations in the dependent variable. In other words, 91.40% variations in GDP were explained by the independent variables, namely: PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID). This result attests to the fact that the variables passed the test of significance and can be said to be relevant to policies formulated to affect GDP. The Durbin Watson *d* statistic for our study is .712 which suggests that the variables under study are positively correlated.

4.2.4 The F-statistics of the Analysis of Variance (ANOVA)

Table 4.5 The F-statistics of the Analysis of Variance (ANOVA)

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	38784878539359 36.000	3	12928292846453 12.000	75.236	.000 ^b
	Residual	30930500591263 2.500	18	17183611439590. 695		
	Total	41877928598485 69.000	21			

a. Dependent Variable: GDP

b. Predictors: (Constant), PMID, PMII, PMIL

Source: Researcher’s computation using SPSS Statistics: 21; 2015

Table 4.5 shows the F–statistics coefficient of our regression estimation. The overall significance of the model is indicated by F-statistics of the Analysis of Variance (ANOVA). The F Statistic compares the joint effect of all the variables together. The F-statistics of the empirical estimation in this study stands at 75.236. This is considered high enough to conclude that the estimated model passed the test of overall significance at 5% levels and to reject the null hypothesis and accept the alternate hypothesis that there is a relationship between GDP and its explained variables; PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID).

5. Discussion of Findings, Conclusion and Recommendations

5.1 Discussion of Findings

This study used the Multiple Regression Model (MRM) to explore the relationship between Primary Mortgage Institutions (PMIs) fundamentals and Gross Domestic Product (GDP) increase in Nigeria. The empirical analysis was carried out using four statistical parameters, namely: Pearson correlation coefficient, t-test coefficients or slope coefficients of the independent variables, Coefficient of determination or the adjusted R square (R^2) and the F-statistics of the Analysis of Variance (ANOVA). The Pearson Correlation coefficient matrix which indicates the strength of linear relationship, displayed high coefficients implying a strong linear relationship between GDP and its explanatory variables ,namely PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID). Strong linear relationship implies that under a viable and vibrant economy, PMIs Loans, PMIs Investments and PMIs Deposits have the potential to contribute maximally to GDP increase on a long run. The adjusted R square (R^2) also shows that the explanatory variables accounted for 91.40% of systematic variations in the dependent variable – GDP. Besides, the F-statistics of the model at 75.236 is considered high enough to conclude that the estimated model passed the test of overall significance at 5% levels.

The t-test parameters, that is, the coefficients of the three explanatory variables concurred with apriori expectation, they exhibited positive signs indicating that they impacted positively on GDP. By economic theory, it implies that as PMIs

loans, PMIs Investments and PMIs Deposits increases, GDP growth rate also increases. However, based on the findings in this study, the coefficients of PMIs Investments (PMII) and PMIs Deposits (PMID) variables are lower than the acceptable value to consider them as being relevant, thus they failed the test of statistical significance at 5% significant levels, thereby casting doubts on their relevance to policies that are formulated to affect GDP. The graphic representations of the variables data buttress this fact. The difference in the growth characteristics of the explanatory variables, PMIs Loans (PMIL), PMIs Investments (PMII) and PMIs Deposits (PMID) as indicated by their graphs suggests minimal impact on GDP increase. While the graph line of GDP sloped sharply up, those of the explanatory variables sloped relatively low giving credence to the fact their contribution to GDP increase during the period under review was minimal.

5.2 Conclusion

Generally, the findings were robust. The results of the Pearson correlation matrix, Coefficient of determination or the adjusted R square (R^2) and the F-statistics of the Analysis of Variance (ANOVA) led us to reject the null hypothesis and accept the alternate hypothesis that there is relationship between GDP and Primary Institutions fundamentals namely; PMI Investments (PMII) and PMI Deposits (PMID) in Nigeria. However, we deduced and conclude from the results of the t-test parameters and the graphic representation of the variables' data that the impact of the explanatory variables on GDP was very minimal, meaning that their contributions to GDP were not significant. We summed up the results and conclude that while there is a significant relationship between GDP and PMI core endogenous variables, the impact of these variables on GDP is minimal in Nigeria.

The reasons for the explanatory variables minimal impact on GDP in Nigeria are obvious. Over the past four decades, particularly from the 1980s, government policies on housing have been somersaulting and inconsistent in Nigeria. Though government has sought to encourage home ownership, very little attention has been paid on housing issues particularly for the low incomes masses – the ordinary people in the society. The problems of funding housing issues have been left to individuals. Unfortunately, housing has become increasingly expensive such that the cost of acquiring a home is over 5 to 10 times the average annual salary of key employees in Nigeria. This has considerable implications for the success of mortgage mechanisms and with the very high cost of living, saving for home acquisition has become a traumatic nightmare for the ordinary Nigerian.

5.3 Recommendations

In order to revamp the activities of Primary Mortgage Institutions in Nigeria, the Federal government through the Central Bank of Nigeria has made efforts to re-capitalize this category of financial Institutions. According to Lamudi (2014), following the recapitalization exercise of the Primary Mortgage Institutions (PMIs), 36 mortgage firms have obtained Central Bank of Nigeria's license to administer mortgage portfolio in Nigeria. These were to complement the credit line of the Federal Mortgage Bank of Nigeria which has been considered as grossly inadequate to meet the growing demand for housing funds. Even where funds are provided, allocation of funds appeared lopsided such that available funds are channeled to the privileged few in the society. We therefore recommend that the relevant Ministry should adopt strategies to ensure effective allocation of housing funds in the country. The difficulties of obtaining housing funds by the less privileged that are in dire need of homes deserve close attention of policymakers and funds allocation are to be properly monitored by regulators.

Following the new policy guideline, PMIs are only allowed to perform duties such as mortgage finance, real estate construction and acceptance of mortgage-focused deposits. The need to enact policies that have the potential to boost the activities of PMIs to include the provision of mortgage finance and other related activities such as the provision of estate management duties in order to re-equip the housing finance market and increase the ratio of mortgage finance as a percentage of GDP cannot be overemphasized. In order to boost the activities of PMIs we recommend the regulatory authority should determine appropriate interest rate for mortgage loans that would encourage an average income earner secure housing credit he could properly service. It is the responsibility of PMIs to encourage and educate clients to cultivate good savings habits. That has the ability to transform into housing savings or become source of capital accumulation to augment businesses that could generate funds for housing purposes.

Finally, we recommend that the government should make provision for effective ways of increasing the national housing stock in its national economic plan. Effective ways means that the government should show commitment, dedication and steadfastness in executing its national housing plans and indeed sources for cheap funds that the average income earner could benefit from. One of the basic requirements for PMIs loans is the presentation of a statutorily recognized title document to land – Certificate of Occupancy (C of O) to evidence land ownership. We also recommend that the bureaucratic process of procuring this document should be reviewed and made easier for prospective house owners to acquire in order to enable access to PMIs housing funds.

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Appendix 1: Data for Empirical Analysis.

YEARS	GDP @ Current Basic Prices N' Million	PMI Loans (PMIL) N' Million	PMI Investments (PMII) N' Million	PMI Deposits (PMID) N' Million
1992	532,614	209	896	6554
1993	683,870	335	1,185	1,576
1994	899,863	560	612	1,044
1995	1,933,211	395	923	1,104
1996	2,702,719	754	2,812	2,489
1997	2,801,972	738	2,103	4,166
1998	2,708,431	786	2,267	4,338
1999	3,194,015	924	2,470	4,596
2000	4,582,127	855	2,368	4,467
2001	4,725,086	1,025	2,879	1,355
2002	6,912,381	6,600	18,283	34,483
2003	8,487,032	12,896	2,400	36,136
2004	11,411,067	6,000	32,291	64,581
2005	14,472,239	2,100	40,879	78,040
2006	18,564,595	7,560	40,355	82,929
2007	20,657,318	40,759	149,094	155,913
2008	24,296,329	108,532	69,829	166,235
2009	24,794,239	118,587	61,193	148,099
2010	33,984,754	132,876	66,986	186,946
2011	37,543,654	122,812	89,697	163,196
2012	40,544,100	122,910	99,420	171,080
2013	42,396,800	132,290	83,340	164,930

Source: Central Bank of Nigeria (CBN) Statistical Bulletin; Volume 22, 2011 and Volume 24, 2013



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