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Abiodun Jogunola
University of Lagos, abbeyjaja@yahoo.co.uk

Chibuike R. Emele
University of Lagos

Austin C. Otegbulu
University of Lagos

A STUDY ON THE IMPACT OF MONETARY POLICIES ON NIGERIAN PROPERTY MARKET

Abiodun JOGUNOLA
abbeyjaja@yahoo.co.uk
Department of Estate Management,
University of Lagos

Chibuike R. EMELE
Department of Estate Management,
University of Lagos

Austin C. OTEGBULU
Associate Professor,
Department of Estate Management,
University of Lagos

Abstract

The authority responsible for formulating monetary policies in Nigeria has focused more on the oil and gas sector while other sectors such as the property sector have not been given theirdeserved attention with regards to monetary policies formulation. Hence, this study examined the impact of monetary policy rate on the Nigerian property market. It was revealed that the key economic indicators that are relevant to the real estate sector include interest rate (monetary policy instrument), GDP (gross domestic product), exchange rate (monetarypolicy instrument), inflation rate as well as international oil price. Secondary data from the Central Bank of Nigeria (CBN) statistical bulletin were analysed using the multivariate regression model. The findings showed that in the long term monetary policy rate has significant impact on loan advanced to the real estate sector. It was recommended that with the importance of the real estate sector in an economy, the CBN should engage property professionals in gathering reliable property market data to be considered in the formulation of monetary policies.

Keywords: Property market, Real estate loans, Monetary policy rate,

1.0 Introduction

Over the years, the Nigerian economy has undergone various level of restructuring to ensure, functionality, better governance, economic strength, and solutions to its many challenges while enabling better harnessing of opportunities. These have had impact on almost every sector of her economy, including the real estate sector. However, as with all the economies of the world, the fundamental objective of every nation is how to achieve economic growth and development (Shuaib, Ekeria & Ogedengbe, 2015). Such aspirations in the property sector cannot be overemphasized because of its major role in the lives of the people.

In order to achieve this fundamental objective, various policies and programmes are pursued which sometimes bring along with them shocks and disturbances both internally and externally.

After Nigeria's independence, development planning had a broad scope, encompassing government policies introduced to achieve national economic objectives, such as accelerated growth and higher levels of average material welfare (Metz, 1991). Of greatest importance to the Nigerian economy as would be to any other economy are the fiscal, and monetary policies (Ajisafe and Folorunso, 2002; Eze&Ogiji, 2013).

In the opinion of Johnson (2015) monetary and fiscal policies are closely related, but Ajisafe and Folorunso, 2002; Adejo and Mobolaji, 2010; Eze and Ogiji, 2013, were of the view that both are distinct and have different profound effects on the economies of nations where they have been used so far. According to Kamm and Chivunga (2010), government fiscal and monetary policies will have a critical impact on the future of sectors such as housing (real estate) , which has been a recipient of public investment.

In reality, government macro-economic policies require a mixture of both fiscal and monetary policy instruments to stabilize an economy because none of both can cure all the problems in an economy without the other (Shuaib et al., 2015).

For instance, a combination of good economic management strategies supported by good public policy initiatives have resulted in the growth of the real estate sector of Dubai's economy over the years (Falade-Obalade and Dubey, 2014). They further stated that it has led to the real estate sector contributing about 22.5% of the GDP of United Arab Emirates, which happens to be the biggest of such contributions from a single source. Whereas Nigeria's real estate sector contribution to GDP is about 7.5% (National Bureau of Statistics, 2015). Hence, the impact of macro-economic policies on the real estate sector cannot be overemphasized.

Fiscal policy deals with macroeconomic levers of power which include budgets, debts, deficit and state spending (Johnson, 2015). Fiscal policy is one of the major economic stabilization weapons that involves measures taken to regulate and control the volume, cost and availability as well as direction of money in an economy to achieve some specified macroeconomic policy objective and/or to counteract undesirable trends in the Nigerian economy (Shuaib et al., 2015). These policy instruments cannot be left to the market forces of demand and supply to decide. Hence government has to intervene through them. The weapons or instruments of fiscal policy include increase (or decrease) in aggregate desired expenditure, tax policy, as well as budgetary policy.

On the other hand, monetary policy, the main focus of this paper, is the process by which monetary authority of a country, generally the Central Bank, controls the supply of money in the economy through the regulations of interest rates, (lending and foreign exchange rates etc.) in order to maintain price stability and achieve high economic growth (www.wikipedia.org). By fixing interest rates, the central bank indirectly equally controls access to credit and inflation rates in the economy.

Monetary policies are effective only when economies are characterized by well developed money and financial markets like developed economies of the world (Abata, Kehinde and Bolarinwa, 2012). This is where a deliberate change in monetary variable influences the movement of many other variables other sectors of the economy, including the property sector.
While monetary policies itself cannot provide infrastructure, it can boost local production (and enhance development of properties) by increasing availability of long-term credit to the real sector (including the real estate sector) and by lowering interest rates (Ononugbo, 2012).
In order to show the relationship between residential properties and monetary policies, Xu and Chen (2011) argued that house price booms are usually preceded by periods of easing monetary policies. However, if not properly managed, the boom may eventually become a

burst.

In view of the foregoing, taken together, fiscal and monetary policies create an investment environment (Johnson, 2015). That is, investment environment for every sector of the economy including the health, manufacturing, oil and gas, education, as well as the real estate sector etc.

The real estate market, also known as the property market can be described as a set of submarkets where property rights are traded (Dugeri, 2011). The trading may be in form of sales, purchase or lease for monetary returns. Unlike other forms of formal markets that have specific dealing locations, the property market has no central dealing location. Nevertheless, property markets are identified according to their geographical character.

According to Nguyen (2015), the four main factors that influence the property market are demographics, interest rates, the health of an economy and government policies. "Understanding the key factors that drive real estate market is essential to performing a comprehensive evaluation of a potential investment" Nguyen (2015). Hence, the fiscal and monetary policies (government policies) of a nation both play vital roles in determining the "health" or performance of the country's property market. Thus, the effects of government policies in the form of monetary policy rate (MPR) on the performance of Nigeria's real estate sector present a problem for investigation.

As a result of its great investment potentials and globalization, the Nigerian property market has attracted some foreign direct investments but its potentials are still far from being harnessed. Hence, Babawale (2008) is of the view that the Nigerian property market though with great potentials like similar markets in several emerging economies in Africa, has not benefitted from internationalized property investment and remains poorly researched.
Without adequate research and with increasing inability to forecast or measure the performance of the real estate market, property investment will remain unattractive to investors, especially the foreign investors. Dugeri (2011) is however of the view that although the market is adjudged immature, it still exhibits potentials to emerge from its current status. However, he argued further that it must be given the needed fillip through a well articulated mix of land use and property taxation policies. As well as through monetary policy instruments, such as interest (bank lending) rate and foreign exchange rates. It is assumed that the higher the interest rate, the less favourable terms you will get for loans from banks.

For the property market, the required evaluation and empirical analyses of the performance of the sector can be carried out with data and indices that are available from monetary policies of the national government on the sector. For instance "property market observers/stakeholders in Asia look forward to policy makers and experts for clues about how the market will perform" (Holt, 2015). This may however be necessary, if one considers that part of the problems of the housing bubbles that resulted into the recent global recession was actually caused by ineffective management of fiscal and monetary policies on residential property market in the United States of America.

However, in Nigeria, due to dearth of research and analyses on these economic indices that drive the property market, the proper assessment of the market by various stakeholders especially investors will be challenging. Similarly, government will find it difficult to know the impact of its policies on the sector.

It is against this backdrop that this paper has arisen to study the impact of Central Bank of Nigeria's monetary policy rate on Nigerian real estate sector from 2010 to 2016. The study purpose will be achieved by (i) identifying the monetary policies that have been in operation in Nigeria during the study period, (ii) investigating the extent such policies have been focused on / directed at the real estate sector, and (iii) to examine the effects of the policies on the real estate market.

2.0 Nigerian Real Estate Sector

Nigerian real estate sector has been greatly influenced by laws, policies as well as institutions in which it is meant to thrive overtime. Land ownership right, right of way over land, leasing rights which usually come with limits all through to mortgage rights on property; all have one form of influence or the other on the usage and benefits accruable from a real estate investment.

In 1978, the military government sought to unify the various administrative laws that existed in different parts of Nigeria by promulgating the Land Use Decree which later became the Land Use Act after it was enshrined in the Constitution. This Act remains the chief land administration law in Nigeria till the present moment and it is difficult to amend because it has been enshrined in the Constitution.

The Act makes land administration by government to be easier as well as the acquisition of land for public purposes. Nevertheless, the Land Use Act has its own challenges which need to be addressed.

For instance, there is still a clear divide as to the ease by which property is registered in Nigeria, which is important in measuring the ease of doing business. According to the Nigerian Bureau of Statistics Report (2015), northern states of Gombe, Borno, Zamfara, Kano and Jigawa are the top five easiest to register property in Nigeria, while the southern states of Rivers, Osun, Ogun, Ondo and Oyo are most difficult. Furthermore, the Report stated that access to finance remains a constraint to real estate development in the country. Less than 1% of private sector lending from Deposit Money Banks (DMBs) is for mortgages, and other sources of longer term lending represent less than 11% banks' balance Sheet. Similarly, international investors remain reluctant to invest in the country's real estate market due to the currency risk eminent in its foreign exchange market (Okoye, 2016) amongst other push factors.

Currently, a growing number of real estate developers in Nigeria are, increasingly, jittery with the crippling impact of the economic recession that has hit the real estate market hard with low demand, over supply, falling prices resulting in properties that have remained unsold or unoccupied for a long period (CBN, n.d.). Furthermore, developers of residential houses are worse hit than their commercial counterparts, because residential properties have a higher sensitivity to economic downturn than commercial properties. This is buttress by the fact that the global recession of 2007/2008 was triggered by the activities in the mortgage sector of the United State of America (USA) economy.

The falling trend is same in the real estate sector across major cities of the country, including Lagos, Abuja and Port Harcourt. In Lagos for instance, demand is weak, residential property prices have come down by as much as 40 per cent, and vacancy rate has increased by 72 percent between January 2015 and June 2016 (CBN, n.d.). This is the situation especially in the high income property market of Ikoyi, Victoria Island etc.

Worthy of mentioning is the fact that Nigeria presently has a huge housing deficit of more than 17 million units, which property investors can take advantage of, and equally benefit from the huge and increasing population of the country. Mortgage rates of commercial banks currently ranges from 18% - 30% .In a bid to develop the mortgage sub-sector of the real estate sector. The Nigerian Mortgage Refinance Company (NMRC) was established (licensed on February 18, 2015) with the main objective of making affordable housing available to Nigerians. It promotes home ownership while deepening the primary and secondary mortgage sectors of the economy.

According to Rewane (2016) the key economic indicators that are relevant to the real estate sector include interest rate (monetary policy instrument), GDP (gross domestic product), exchange rate (monetary policy instrument), inflation rate as well as international oil price. These economic indicators equally determine the performance of the real estate sector. However, the major drawbacks of the sector in Nigeria include; issues of property titling, bureaucracy challenges faced by property investors, ineffective demand from consumers due to lack of capital , ignorance about mortgages, over protection of lessee by the laws, lack of

adequately developed mortgage sector, unstable foreign exchange policies amongst others. Nevertheless, in spite of the several challenges being faced by the real estate sector, it remains one of the sectors that have done quite well in Nigeria (Okoro, 2014), and one sector of the Nigerian economy with a bright future (Chagoury, 2016).

2.1 Monetary Policy Regime in Nigeria (2011-2014)

In Nigeria, the two major phases of monetary policy regime are (i) the pre-SAP (Structural Adjustment Programme) period and (ii) the period since the introduction of SAP. Before the introduction of SAP in 1986, the CBN's monetary policy framework placed emphasis on direct monetary policy control, while it relied and continue so, on indirect approach based on the use of market instruments such as the interest rates in monetary management in the second period.

Over time, the framework of formulating and implementing monetary policy in Nigeria has undergone tremendous transformation in line with the evolving financial environment. The major developments include the shift from direct control to market-based approach to monetary management, and the switch by the CBN since 2002 from short-term (one-year) to medium-term (two-years framework in the conduct of monetary policy. This is aim at freeing monetary policy from the problem of time inconsistency and minimizing over-reaction due to temporary shocks

2.1.1 MP Regime (2011)

According to the CBN (www.cbn.gov.ng) it achieved significant progress in the restoration of stability in the financial sector by the end 0f December 2010. Consequently, in the first half of 2011, the basis of monetary policy was the promotion of price stability in the economy. Domestic inflation remained high in the first half of 2011 due to the rise in international oil and other commodity prices, as well as the high spending necessitated by the general elections of that year. In addition, AMCON operations in stabilizing the banking sector as well as bail out to banks during the crisis period of 2009 were equally contributory factors. The CBN reported that it employed the Monetary Policy Rate (MPR) to anchor short-term interest rates, and to rein-in inflation expectations. Open market operations (OMO) supported by reserve requirements and discount window operations remained the major instruments of monetary policy in the second half of 2011. At the end of the year, while private consumption stood at $270.9, GDP was $414.1 and inflation at 10.9% (Rewane, 2016).

2.1.2 MP Regime (2012)

In 2012, the monetary policy environment was characterized by continuing threat of inflationary pressures against the backdrop of decreasing trend in output growth. Other key concerns in the year were, narrowing the spread between the lending and deposit rates, sustaining a stable exchange rate for the naira, creating a buffer for the external reserves, sustaining stability in money market rates, and mitigating the impact of the continued slowdown in global economic activities on the domestic economy. In view of these multi-dimensional challenges, monetary policy during the period focused on deploying the mix of appropriate instruments to deliver on price stability. In addition, the slow pace of recovery in the advanced economies, the reduced growth momentum in the emerging economies and the prolonged financial crises in the Europe region were some of the key considerations that defined the thrust of monetary policy in the period, according to the CBN. The Bank continued with its tight monetary policy approach, which commenced in the third quarter of 2010, using the MPR as the signaling interest rate to affect money supply and rein-in inflation expectations. OMO continued to be used as the main instrument of monetary policy. According to Rewane (2016) at the end of the period, the private consumption declined to $269.8 against that of 2011, GDP grew to $414.1 while inflation rose to 12.24%.

2.1.3 MP Regime (2013)

The CBN reported that monetary policy in 2013 was aimed primarily at sustaining the already moderated rate of inflation which was achieved in the first half of 2013. The fall in inflation rate from

8.4% at end of June 2013 to 8.0% at end of December 2013 is evidence of the effectiveness of the CBN policy. Besides, the monetary policy also aimed at limiting pressure on the exchange rate, boosting the external reserves position, sustaining stability in the money market and reducing the spread between lending and deposit rates. The MPR was the principal instrument used to control the direction of interest rates and anchor inflation expectations in the economy. The other intervention instruments included OMO, Discount Window Operations, Cash Reserve Ratio (CRR) and foreign exchange Net Open Position (NOP). Rewane (2016) reported that private consumption increased to $375.4, GDP increased to $515, and inflation fell to 8.52%, at the end of the period.

2.1.4 MP Regime (2014)

The CBN reported that in 2014, its monetary policy was focused on achieving the objective of price and exchange rate stability. Hence, it sustained its tight policy stance with a view to ensuring that electioneering spending did not result into unimaginable inflationary rate. Inflation remained within single digit, and fluctuated between 7.7 and 8.5 per cent. The exchange rate experienced significant pressure especially during the second half of the year due to certain factors. The financial market was generally stable for the year under review, although, significant fluctuations were noticed towards the end of the year. Policy instruments such as the MPR, OMO, CRR, NOP were deployed to achieve price and financial system stability, with a view to boosting investor confidence and reduce concerns about declining foreign exchange reserves. The year ended with private consumption rising to $420.2, GDP increasing to $568.5 while inflation fell to 8.06%.

However, a successful monetary policy is a function of certain fundamental imperatives, which include relevant legal and regulatory framework, deep and broad financial market, good understanding of monetary transmission lag, availability of timely and accurate data and information for the monetary authorities.

2.2 The Effect of Monetary Policy on the Real Estate Sector

Olowofeso et al. (2012) opined that central banks often rely on movement in house price indices to monitor households borrowing capacity, their debt burden, and the effects of these on aggregate consumption, for monetary policy formulation. Furthermore, Sousa (2007) discovered that monetary policies contractions usually have a large and negative impact on housing prices which equally affect residential output. In their study, Oni, Emoh and Ijasan (2012) submitted that money supply in an economy is significantly affected by the money market indicators and, by implication, the funds available to the real estate sector.

When the amount of money in circulation in an economy is much, and credit becomes cheap as a result of this, house prices tend to increase slightly as demand for houses also tends to increase. Similarly, a fiscal policy, be it reduction in tax payment or increased government spending, could affect residential property markets through increased overall demand for houses. It is against this backdrop that Taylor (2007) concluded that the housing bubbles in the United States which resulted in global economic recession were as a result of the ineffective management of the impact of fiscal and monetary policies on residential property market. It could also be the lack of awareness of such impact on real estate on the part of the national policy makers who would rather focus on other sectors of economy just as the Nigerian policy makers often focus more on the oil and gas sector.

In the Asia Pacific region, real estate analysis indicates that monetary policy, tax, regulations and underlying fundamental economic drivers such as demographics and urbanization have significant impact on property markets in the region (www.propertywire.com).

The research carried out by Xu and Chen in 2011 revealed that the Chinese government through the Chinese State Council adopted several monetary policies to control overheating home prices and also to reduce the risk of real estate bubble. The Chinese economy has been gradually transformed from a state-planning economy to a market-oriented economy over the last three

decades. However, unlike the Nigerian economy, in China, commercial banks are still primarily state owned or state holding which make monetary policy to play a pivotal role in controlling the supply of credit to the real estate sector. In similar vein, the Central Bank of Nigeria controls the privately owned commercial banks in Nigeria through its various rules and regulations. It may be appropriate to mention that China has fast emerged as another economic world power.

In Singapore, the major focus of monetary policy is to control inflation (Parrado, 2004). It is a forward looking policy rule that reacts to both inflation and output volatility. The country unlike Nigeria and South Africa (Verryne, 2012) uses its currency rather than interest rates, as a monetary policy tool to maintain a steady appreciation of its currency against major currencies including the US dollar. Consequently, promotion of price stability in every sector of the economy, including the property market, has been the basis for sustainable economic growth in Singapore.

The predictability of a property market through analysis of government policies and available property market data are essential for the decision making process of stakeholders in the property industry. As it may be possible to rightly analyse, evaluate, predict or forecast the property markets of matured markets such as the United States, Singapore, United Kingdom and Hong Kong (Dugeri, 2011), such may not be said of Nigerian property market.

In view of this, Waylort (n.d.) argued that there is considerable need for an econometric model of the property market which must include instrumental variables such as the fiscal policy instruments, federal housing program instruments, as well a monetary policy instruments. Furthermore, he argued that until such a model is constructed, generalizations about the relationship between these policy instruments and the behaviour of the property market can at best be termed “speculative”. If not, according to Lime, McGreal & Webb (2006), “investors perception about the market will remain hinged on myths rather than empirical evidence”.

3.0 Study Methodology

The manipulation of the quantity of money in the economy is the most influential instrument for monetary policy implementation (Chuku, 2009) and as earlier mentioned the major monetary instrument for controlling money supply and inflation in an economy is the interest rate otherwise known as monetary policy rate (MPR). MPR is the interest rate at which banks can borrow from the central bank, while the central bank equally influences the rate at which the banks can lend to companies and their customers. Consequently, due to the importance of MPR in controlling the quantity of funds in an economy and by extension funds that would be available for real estate investment (Oni et al., 2012), this study has focused on the impact of MPR as a monetary policy instrument on loans advanced by commercial banks to the real estate / construction sector during the period under review (2010 – 2016).

The real estate / construction loans (REL) were the dependent variable while the monetary policy rate (MPR) was the independent variable. Hence, we specified the following model:

$$REL_t = \psi_0 + \psi_1 MPR_t + \psi_2 PLR_t + \psi_3 DDGRT_t + \psi_4 EXCH_t + \mu_t$$

(3.1) The variable definitions and apriori expectations is presented in Table 3.1 below;

Table 3.1: Variable Definitions

Code	Variable	Measurement	Parameters	Apriori Expectat-ion	Source
REL_t	Real estate /construction loans at time t	Deposit Money Banks' Sectoral Allocation of Credit	Dependent variable		CBN 4th Qtr 2016 bulletin
MPR_t	Monetary policy rate at time t	CBN Lending rate to commercial banks	ψ_1	Negative	CBN 4th Qtr 2016 bulletin
PLR_t	Prime lending rate T time t	Commercial banks lending rate to borrowers	ψ_2	Negative	CBN 4th Qtr 2016 bulletin
$DDGRT_t$	Demand deposit growth rate at time t	Changes in demand deposits on monthly basis	ψ_3	Positive	CBN 4th Qtr 2016 bulletin
$EXCH_t$	Exchange rate at time t	Official exchange rate of naira to 1 US dollars	ψ_4	Negative	CBN 4th Qtr 2016 bulletin

Several studies on similar subject have used vector auto regressions (VARs) to examine the impact of monetary policy shocks on housing prices (Kuttner & Shim, 2012), but this study have utilized the multivariate regression model to analyse secondary data obtained mainly from the Central Bank of Nigeria (CBN) fourth quarter 2016 Statistical Bulletin.

Study hypothesis: CBN's monetary policy rate has no significant impact on loan advanced to the real estate / construction sector.

4.0 Data Analysis and Discussions

4.1 Trend Analysis

It is imperative that a trend analysis be conducted on monetary policy variables and the real estate / construction loans growth rate. The monetary policy variables examined are monetary policy rate (MPR), prime lending rate (PLR) and demand deposit growth rate (DDGRT) between the periods of January 2010 – December 2016 for the Nigerian economy. Figure 4.1 below shows the trend analysis of such variables.

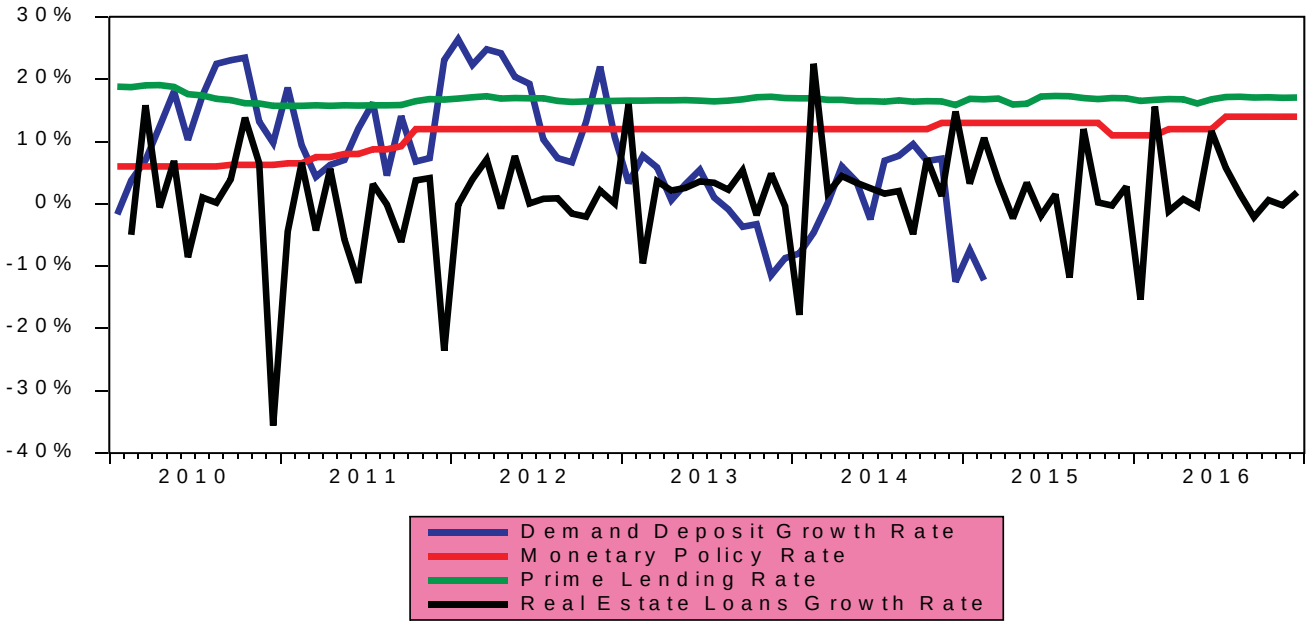


Figure 4.1: Monetary Policy Variables
Source: CBN 2016 4th Quarter Statistical Bulletin

Figure 4.1 above reveals that the monetary policy rate has relatively remained stable for the period under study with little deviations as real estate loans growth rate fluctuated around it. However, prime lending rate remained above the monetary policy rate throughout the period which is expected, and the graph reveals that shocks that have been experienced in real estate and construction loans growth rate has not been triggered by shocks in prime lending rate. Put differently, prime lending rate has not triggered a shock in the real estate loans growth rate, a further confirmation of this using the impulse-response function was examined.

4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics of the Variables

	Demand Deposit Growth Rate (%)	Exchange Rate (%)	**Monetary Policy Rate (%)**	Prime Lending Rate (%)	**Real Estate & Construction Loans**
Mean	8.010488	176.9943	10.94940	16.76889	842.0 billions
Median	7.131449	160.6772	12.00000	16.73669	771.0 billions
Maximum	26.45883	309.7304	14.00000	19.05416	1,420.0 billions
Minimum	-12.54730	150.0753	6.000000	15.72663	453.0 billions
Std. Dev.	9.914184	39.56637	2.525109	0.697833	284.0 billions
Skewness	-0.073920	2.384257	-1.053542	1.338024	0.582472
Kurtosis	2.453384	7.986249	2.641317	5.900602	2.080063
Jarque-Bera	0.828334	166.6049	15.98958	54.51154	7.711820
Probability	0.660891	0.000000	0.000337	0.000000	0.021154
Observations	62	84	84	84	84

Source: CBN 2016 4th Quarter Statistical Bulletin

Table 4.1 clearly shows the average of the variables used and the normality condition of each variable.

The result of the probability clearly shows that Demand Deposit Growth Rate is normally distributed as the null hypothesis of normal distribution is not rejected given that the probability is greater than 5% while the probability of real estate and construction loans growth rate, monetary policy rate, prime lending rate and exchange rate are less than 5%. The decision is based on the null hypothesis of normality distribution and the alternative hypothesis, hence null hypothesis is accepted for probability values greater than 5%.

Consequently, the null hypothesis: "CBN's monetary policy rate has no significant impact on loan advanced to the real estate / construction sector", is rejected.

4.3 Correlation Test

A correlation test using Pearson Product Moment Correlation is conducted to examine the degree of relationship associated with monetary policy tools and real estate and construction loans. The result of the test is presented in Table 4.2.

Table 4.2: Correlation Test Result

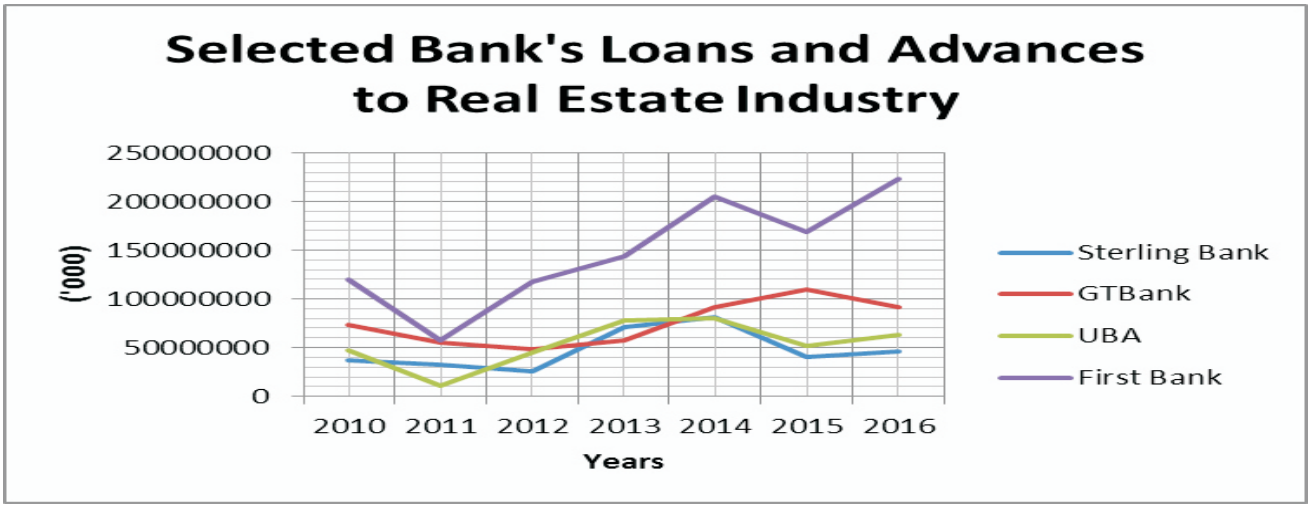
	Demand deposit growth rate	Exchange rate	**Monetary Policy Rate**	Prime Lending Rate	**Real Estate and Construction Loans**
Demand deposit growth rate	1.0000	-0.4983	-0.3272	0.0001	-0.3661
Exchange rate		1.0000	0.6817	-0.1902	0.3480
Monetary Policy Rate			1.0000	-0.2213	-0.2430
Prime Lending Rate				1.0000	0.1585
Real Estate and Construction Loans					1.0000

Source: CBN 2016 4th Quarter Statistical Bulletin

It can be seen that from Table 4.2, there is a weak relationship between real estate and construction loans and advances given by deposit banks and the monetary policy rate, although the negative relationship expected was true. Also, there is a weak positive relationship between real estate and construction loans and advances given by deposit banks and exchange rate, prime lending rate but negative with demand deposit growth rate.

4.4 Selected Bank's Loans and Advances Given to the Real Estate & Construction Industry

In this section, we carefully examined selected bank's contribution of loans and advances given to the real estate/construction sector. The banks are UBA (United Bank for Africa), First Bank, GT Bank (Guarantee Trust Bank) and Sterling Bank for the period 2010 to 2016.



Source: CBN 2016 4th Quarter Statistical Bulletin

Figure 4.2: Selected Bank's Loans and Advances to Real Estate/Construction Industry

From Figure 4.2, it can be seen that First bank gave out the highest volume of loans to the real estate/construction sector for the whole period, while Sterling Bank gave out the least. Also, GT Bank gave out considerably minimum out of the total. A further confirmation of this is presented in Figure 4.3 below.

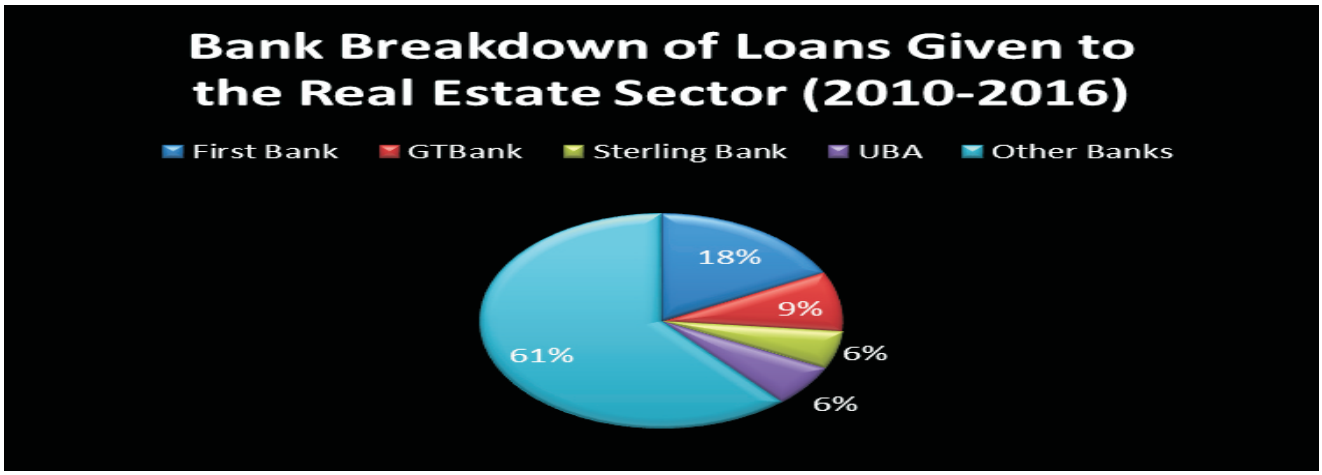


Figure 4.3: Bank Breakdown of Loans Given to the Real Estate Sector (2010-2016)

Table 4.3: Descriptive Statistics of Selected Bank's Loans and Advances to Real Estate / Construction Sector

	First Bank	GTBank	Sterling Bank	UBA
Mean	148 billions	75.5 billions	47.7 billions	53.6 billions
Median	144 billions	73.8 billions	40.2 billions	51.7 billions
Maximum	223 billions	110 billions	81.2 billions	79.8 billions
Minimum	57.8 billions	48.7 billions	25.6 billions	10.6 billions
Jarque-Bera	0.266614	0.607815	0.879939	0.500667
Probability	0.875196	0.737929	0.644056	0.778541
Sum (NGN)	1,040 billions	529 billions	334 billions	375 billions

Source: Bank's Respective Annual Report

4.5 Unit Root Test

The study deploys Augmented Dickey-Fuller (ADF) test to examine the stationarity of the time series and test the null hypothesis of unit root. It is expected that the series do not contain unit root in order to find relationship among the variables in the long run. The test is carried out at levels, and first difference using 5% Mackinnon Critical value. The variables of demand deposit growth rate, real estate and construction loans growth rate, monetary policy rate, prime lending rate and exchange rate were tested. The levels of statistics of the tests are reported in Table 4.4 below. ADF reported all the variables except prime lending rate not stationary at the level. Thereafter, test was carried out on the series at first differences as also presented in Table 4.4. At 1%, and 5% Mackinnon Critical value, ADF test reported all the variables except prime lending rate which is already stationary at levels stationary at this first difference. This finding implies that the series contains no unit root at level and the difference level; hence, their seasonal variation has been corrected for, making them fit for regression. These are illustrated in the table below.

Table 4.4 Unit root test

Variable	Method	ADF at level	ADF at I(0) critical value (5%)	ADF at I(1)	ADF at I(1) critical value (5%)	Order of integration
DDGRT	ADF	-2.264633 (0.1866)	-2.910019	-8.776118 (0.0000)	-2.910860	I(1)
EXCH	ADF	1.352097 (0.9987)	-2.897678	-6.333606 (0.0000)	-2.897678	I(1)
MPR	ADF	1.580182 (0.4882)	-2.896779	-8.668213 (0.0000)	-2.897223	I(1)
PLR	ADF	-3.270957 (0.0195)	-2.896779			I(0)
LOG(REL)	ADF	-0.577625 (0.8690)	-2.896779	-10.73268 (0.0001)	-2.897223	I(1)

Source: CBN 2016 4th Quarter Statistical Bulletin

Given that the variables are not all stationary at first difference, Pesaran, Shin & Smith (2001) proposed that for such order of integrated series, ARDL (Autoregressive Distributed Lag Model) be run in order to make provision for such integration series. To achieve this, a lag length selection criterion was conducted on the series.

4.6 Lag Length Selection Criteria

Before the ARDL bound test for co-integration is conducted, it is imperative to test for the optimal lag length criteria for each variable. The Akaike information criterion is used.

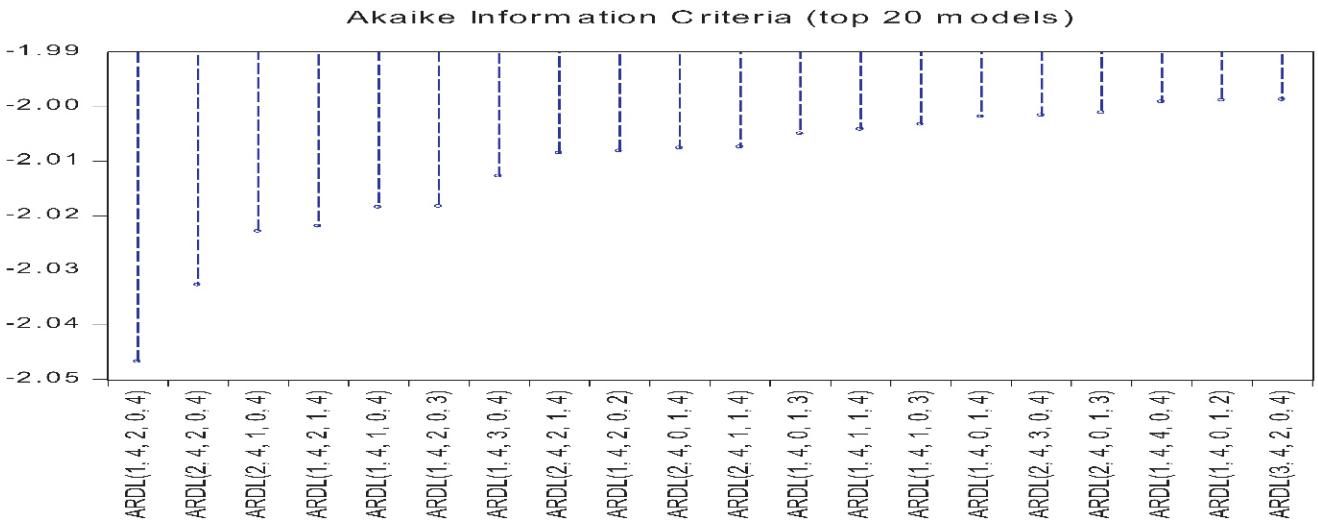


Fig 4.4: Akaike Information Criterion lag length structure of the ARDL model

The best fitted ARDL model is selected based on the least Akaike information value. From Figure 4.4, it is revealed that the optimal lag length is to the order of ARDL (1, 4, 2, 0, 4).

4.7 Co-integration Test

Here, the ARDL bound test co-integration is used and the result is presented in Table 4.5.

Table 4.5: ARDL Bound Co-Integration Test

Level of significance	Lower Bound I(0)	Upper Bound I(1)
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

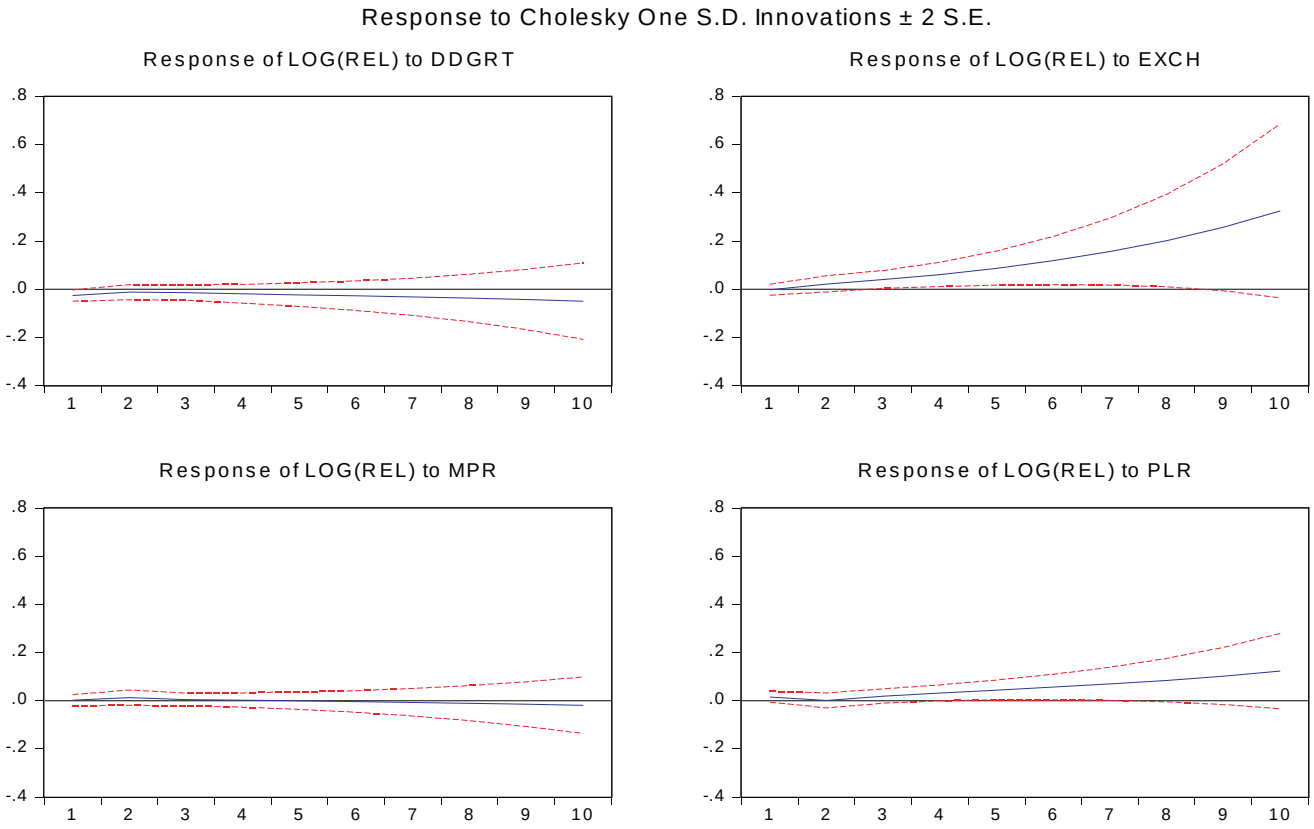
Estimated Model: $\log REL_t = f(MPR_t, PLR_t, EXCH_t, DDGRT_t)$

Optimal Lags: (1, 4, 2, 0, 4)

F- Statistics: 4.310935***

Table 4.5 shows that the F-statistics is greater than the 5% lower and upper bound test and we can therefore conclude that there is co-integration; hence the variables are co-integrated in the long run.

4.8 Impulse - Response Function



Source: CBN 2016 4th Quarter Statistical Bulletin

Fig 4.5: Impulse Response Function for Real Estate / Construction Loans and Monetary Policy Rate

Impulse response functions show the response of variables to one standard-deviation shock in itself and in other variables in the model over a particular time period. According to Alege (2010), impulse response functions trace out how the endogenous variables of the model respond to shocks which the economy undergoes within a given period. Simply put, it traces out how the change in one variable impacts other endogenous variables. In this study, we shall be making use of Cholesky one standard-deviation innovation over a time period of ten years. This study also considered both the use of multiple graphs to see how the variables respond individually. The multiple graphs also show the upper and lower boundary using positive and negative two standard errors.

From Figure 4.5, Real estate and construction loans responds negatively to demand deposit growth rate after the second year with the impact being felt most 10 years after the shock. The response of Real estate and construction loans to a shock in demand deposit growth rate implies that demand deposit growth rate does not cause a shock in real estate and construction loans. Real estate and construction loans respond positively to exchange rate after the first year with the impact being felt most 10 years after the shock. The response of Real estate and construction loans to a shock in exchange rate implies that exchange rate causes a shock in real estate and construction loans. Real estate and construction loans did not respond to monetary policy rate after the first year even till 10 years later. The implication of this is that monetary policy rate as a monetary policy tool is not effective in determining real estate loans given by demand deposit banks. Real estate and construction loans respond positively to prime lending rate after the third year with the impact being felt most 10 years after the shock. The response of Real estate and construction loans to a shock in prime lending rate implies that prime lending rate causes a shock in real estate and construction loans, although this shock is positive, our apriori expectation could have been negative.

Table 4.6: ARDL long and short run result

Dependent Variable: log (REL)

Long run Result		Short Run Result	
Variable	**Coefficient**	**Variable**	**Coefficient**
MPR	-0.09** (-3.58)	Δ(MPR)	-0.034 (-1.11)
PLR	0.077 (0.98)	$\Delta (MPR)_{t-1}$	0.126** (3.09)
EXCH	0.041** (4.16)	$\Delta (MPR)_{t-2}$	0.005 (0.12)
DDGRT	-0.008 (-1.37)	$\Delta (MPR)_{t-3}$	-0.089** (-2.90)
C	20.517** (9.85)	$\Delta (PLR)_{t}$	0.098 (1.86)
		$\Delta (PLR)_{t-3}$	-0.076 (-1.65)
		$\Delta (EXCH)_{t}$	0.011** (3.93)
		$\Delta (DDGRT)_{t}$	-0.001 (-0.55)
		$\Delta (DDGRT)_{t-1}$	0.003 (1.07)
		$\Delta (DDGRT)_{t-2}$	0.00005 (0.025)
		$\Delta (DDGRT)_{t-3}$	0.003 (1.65)
		$CointEq_{t-1}$	-0.281** (-3.11)
		R-squared	0.91
		Adjusted R-Squared	0.88
		Prob (F-statistic)	0.0000
		Durbin-Watson Statistics	2.4

Source: CBN 2016 4th Quarter Statistical Bulletin

From Table 4.6, it can be seen that in the short run, there is a positive impact of prime lending rate and exchange rate on real estate loans and advances growth rate, although only exchange rate is statistically significant at 5%. The implication of this result is that prime lending rate and exchange rate are positive macroeconomic policy drivers of real estate loans and advances growth rate. Exchange rate conforms to the aprori expectation while prime lending rate does not. The possible reason for this is probably because the return on real estate investment drives the market to borrow irrespective of the prime lending rate. The long run result also shows that there is a negative impact of monetary policy rate and demand deposit growth rate on real estate loans and advances growth rate, although demand deposit growth rate is statistically insignificant at 5%. The monetary policy rate conforms to apriori expectation and it shows that monetary policy rate is a major macroeconomic policy driver of real estate loans and advances growth rate.

In the short run, last year and last three years monetary policy rate respectively has a positive and negative statistical significant impact on real estate loans and advances growth rate for the current year. Also, current exchange rate has a positive statistical significant impact on real estate loans and advances growth rate. However, current year and last three years prime lending rate does not have a significant impact on real estate loans and advances growth rate. Also, current period till last three years demand deposit growth rate does not have a significant impact on real estate loans and advances growth rate. A major conclusion drawn from the result of this finding is that monetary policy rate and exchange rate both in the long run are major macroeconomic policy drivers and determinants of real estate loans and advances given by the demand deposit financial institutions. However, while the exchange rate is equally a major macroeconomic driver and determinant of real estate loans and advances in the short run, the monetary policy rate is not. MPR does not have strong impact on real estate / construction loans and advances in the short run because the effect of real estate is felt in a long term due to the fact that real estate is long term in nature.

5.0 Conclusion and Recommendations

The study attempts to examine the impact of monetary policies most especially the monetary

policy rate (MPR) on the Nigerian property market in order to guide the monetary authority that is the Central Bank of Nigeria (CBN) in formulating policies that take into consideration the real estate sector. It was revealed that in other economies, property experts and property investors looked forward to know how the monetary policies of the government would affect their property investment thereby taking informed decision.

It was established that two major phases of monetary policy regime existed in Nigeria viz-a-viz; the pre-SAP, and the period since the introduction of SAP. However, a major conclusion drawn from the analyses of the secondary data of the study is that in the long run, MPR is a major macroeconomic policy drivers as well as a major determinants of real estate loans and advances given by commercial banks. Hence, the analysed MPRs from 2010 to 2016 showed significant impact on the Nigerian property market with regards to the loans and advances to the sector within the same period.

Recommendations of the study are as follows;

i. Monetary policy authority should shift focus from oil and gas sector to other real sectors of the economy such as the property sector when formulating monetary policies. Most importantly, it is believed that crude oil which is the major driver of our economy may not be relevant in about two decades as developed economies such as Britain, Germany, France etc. are planning to phase out petrol and diesel vehicles by 2030-2040.

ii. CBN should engage property experts in gathering reliable property market data for the purpose of using same in formulating property related monetary policies for the Nigerian economy.

iii. If the above are implemented, property investors both domestic and foreign will find it easy to analyse / predict the Nigerian property market, and would be able to make informed decision for their investment purpose.

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Appendix

Null Hypothesis: DDGRT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.264633	0.1866
Test critical values:	1% level	-3.542097	
	5% level	-2.910019	
	10% level	-2.592645	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(DDGRT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=10)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.776118	0.0000
Test critical values:	1% level	-3.544063	
	5% level	-2.910860	
	10% level	-2.593090	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EXCH has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.352097	0.9987
Test critical values:	1% level	-3.513344	
	5% level	-2.897678	
	10% level	-2.586103	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EXCH has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.352097	0.9987
Test critical values:	1% level	-3.513344	
	5% level	-2.897678	
	10% level	-2.586103	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(EXCH) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.333606	0.0000
Test critical values:	1% level	-3.513344	
	5% level	-2.897678	
	10% level	-2.586103	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: MPR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.580182	0.4882
Test critical values:	1% level	-3.511262	
	5% level	-2.896779	
	10% level	-2.585626	

*MacKinnon (1996) one-sided p-values.
Null Hypothesis: D(MPR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.668213	0.0000
Test critical values:	1% level	-3.512290	
	5% level	-2.897223	
	10% level	-2.585861	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: PLR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.270957	0.0195
Test critical values:	1% level	-3.511262	
	5% level	-2.896779	
	10% level	-2.585626	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LOG(REL) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.577625	0.8690
Test critical values:	1% level	-3.511262	
	5% level	-2.896779	
	10% level	-2.585626	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LOG(REL)) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.73268	0.0001
Test critical values:	1% level	-3.512290	
	5% level	-2.897223	

	10% level	-2.585861

*MacKinnon (1996) one-sided p-values.

ARDL Bounds Test
Date: 07/22/17 Time: 04:58
Sample: 2010M05 2015M02
Included observations: 58
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.310935	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

ARDL Cointegrating And Long Run Form
Dependent Variable: LOG(REL)
Selected Model: ARDL(1, 4, 2, 0, 4)
Date: 07/22/17 Time: 04:57
Sample: 2010M01 2016M12
Included observations: 58

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MPR)	-0.033778	0.030456	-1.109092	0.2737
D(MPR(-1))	0.126401	0.040802	3.097904	0.0035
D(MPR(-2))	0.004759	0.040739	0.116811	0.9076
D(MPR(-3))	-0.088518	0.030483	-2.903842	0.0059
D(PLR)	0.097562	0.052499	1.858348	0.0701
D(PLR(-1))	-0.075711	0.045880	-1.650205	0.1064
D(EXCH)	0.011432	0.002912	3.926174	0.0003
D(DDGRT)	-0.001172	0.002124	-0.551905	0.5839
D(DDGRT(-1))	0.002659	0.002485	1.069998	0.2907
D(DDGRT(-2))	0.000053	0.002505	0.021261	0.9831

D(DDGRT(-3))	0.003402	0.002059	1.652186	0.1060
CointEq(-1)	-0.280876	0.090382	-3.107647	0.0034

Cointeq = LOG(REL) - (-0.0852*MPR + 0.0769*PLR + 0.0407*EXCH
-0.0075*DDGRT + 20.5165)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR	-0.085155	0.023787	-3.579944	0.0009
PLR	0.076937	0.078588	0.978985	0.3332
EXCH	0.040702	0.009776	4.163692	0.0002
DDGRT	-0.007512	0.005478	-1.371321	0.1776
C	20.516525	2.083863	9.845428	0.0000

R-squared	0.913321	Mean dependent var	27.23777
Adjusted R-squared	0.882365	S.D. dependent var	0.226116
S.E. of regression	0.077553	Akaike info criterion	-2.046750
Sum squared resid	0.252610	Schwarz criterion	-1.478352
Log likelihood	75.35574	Hannan-Quinn criter.	-1.825347
F-statistic	29.50318	Durbin-Watson stat	2.486989
Prob(F-statistic)	0.000000		

Year	Month	REL	MPR	PLR	DDGRT	EXCH	REL
2010	Jan	764,834,305,288.97	6	18.82109	-1.68046	150.3325	
	Feb	726,763,125,927.46	6	18.73828	3.759225	150.9721	-4.97768
	March	841,747,610,660.29	6	19.02869	6.99663	150.0753	15.82153
	April	836,812,987,295.23	6	19.05416	12.44314	150.3768	-0.58628
	May	894,153,000,946.53	6	18.77455	18.06519	151.4905	6.852188
	June	817,311,180,651.45	6	17.64674	10.28385	151.2776	-8.59383
	July	825,301,684,438.82	6	17.40244	17.40958	150.2686	0.977718
	August	826,643,585,478.94	6	16.8915	22.49466	150.6973	0.162607
	Sept	858,892,878,994.65	6.25	16.65631	23.07462	152.6215	3.901196
	Oct	977,702,687,276.15	6.25	16.1646	23.50949	151.784	13.83292
	Nov	1,041,408,257,962.99	6.25	16.11156	13.21301	150.5475	6.515987
	Dec	670,304,810,900.29	6.25	15.73752	9.75812	152.6295	-35.6349
2011	Jan	640,558,386,168.25	6.5	15.72663	18.66919	152.4745	-4.43783
	Feb	682,733,645,511.68	6.5	15.74951	9.424271	152.8574	6.584259
	March	653,741,644,174.84	7.5	15.813	4.329568	155.2126	-4.24646
	April	690,358,192,247.94	7.5	15.75441	6.257313	154.5967	5.600986
	May	650,632,069,029.25	8	15.81154	7.02325	156.1741	-5.75441
	June	567,880,685,360.87	8	15.76377	12.08556	155.6545	-12.7186
	July	586,042,365,279.64	8.75	15.83559	16.26296	152.4062	3.198029
	August	585,457,546,701.30	8.75	15.82	4.562055	153.7881	-0.09965
	Sept	549,591,676,879.42	9.25	15.87	14.06797	156.7045	-6.12614

	Oct	570,205,722,514.82	12	16.48867	6.791138	159.8195	3.750782	
	Nov	593,591,279,613.04	12	16.82381	7.346399	158.8285	4.101149	
	Dec	453,503,633,805.10	12	16.75337	23.11154	162.172	-23.5999	
2012	Jan	452,873,392,293.70	12	16.92	26.45883	161.3095	-0.13914	
	Feb	470,486,012,290.27	12	17.11	22.32668	158.586	3.88917	
	March	503,956,382,366.24	12	17.27	24.80979	157.7164	7.11392	
	April	500,071,049,467.00	12	16.9	24.17955	157.4421	-0.7709	
	May	538,447,792,880.77	12	16.98	20.39751	158.4619	7.67431	
	June	538,768,700,144.26	12	16.93	19.26617	162.3295	0.059616	
	July	543,167,473,576.47	12	16.96	10.33445	161.3282	0.816305	
	Augus t	547,922,836,073.93	12	16.53	7.34737	158.969	0.875605	
	Sept	539,305,758,846.51	12	16.37	6.648193	157.7815	-1.57267	
	Oct	528,202,711,018.05	12	16.48	13.19063	157.243	-2.05876	
	Nov	539,344,928,837.28	12	16.51	22.02933	157.5768	2.109416	
	Dec	539,759,763,461.46	12	16.54	10.73636	157.3253	0.076945	
2013	Jan	626,456,240,000.00	12	16.57	3.31151	156.9595	16.06195	
	Feb	566,337,160,000.00	12	16.56	7.712338	157.523	-9.59668	
	March	586,938,760,000.00	12	16.61	5.840436	158.379	3.637763	
	April	599,450,730,000.00	12	16.65	0.596311	158.2038	2.131738	
	May	614,670,450,000.00	12	16.66	3.15956	158.019	2.538823	
	June	636,716,300,000.00	12	16.56	5.455853	160.02	3.58664	

	July	658,200,088,192.33	12	16.47	1.014061	161.1248	3.374189
	August	673,137,385,886.51	12	16.55	-0.88686	161.154	2.269371
	Sept	709,380,503,957.40	12	16.76	-3.70109	161.96	5.384342
	Oct	696,413,100,000.00	12	17.1	-3.30437	159.8335	-1.82807
	Nov	730,059,100,000.00	12	17.17	-11.5076	158.7867	4.831329
	Dec	726,921,600,000.00	12	17.01	-8.71938	159.0505	-0.42969
2014	Jan	597,265,840,000.00	12	16.9469	-8.00091	160.2295	-17.8363
	Feb	731,505,390,000.00	12	16.93014	-4.68113	163.6225	22.47558
	March	744,263,790,000.00	12	16.68679	0.151672	164.6214	1.744212
	April	777,385,320,000.00	12	16.70335	5.993717	162.1915	4.450168
	May	803,627,260,000.00	12	16.50237	3.610671	161.8585	3.375676
	June	823,789,500,000.00	12	16.49648	-2.46391	162.8195	2.509
	July	837,436,300,000.00	12	16.43768	6.907947	162.2462	1.65649
	August	854,664,240,000.00	12	16.5996	7.722741	161.9886	2.057232
	Sept	813,161,550,000.00	12	16.44041	9.609492	162.9323	-4.85594
	Oct	872,150,970,000.00	12	16.48317	6.880188	164.6425	7.254274
	Nov	883,290,930,000.00	13	16.47055	7.239648	171.101	1.277302
	Dec	1,014,166,360,000.00	13	15.88324	-12.5473	180.3286	14.8172
2015	Jan	1,047,303,250,557.00	13	16.86	-7.44414	181.7835	3.266711
	Feb	1,158,390,632,370.33	13	16.76641	-12.2824	194.48	10.60728
	March	1,200,843,867,081.64	13	16.90075		197.0727	3.664569
	April		13	15.9514		197	-2.3292

	May	1,212,822,094,938.73	13	16.07611		197	3.406175
	June	1,189,511,060,384.27	13	17.23675		196.9159	-1.92197
	July	1,207,382,057,409.21	13	17.30445		196.9737	1.502299
	August	1,064,233,816,624.00	13	17.28951		197	-11.8563
	Sept	1,191,954,286,592.14	13	17.01808		196.9975	12.00117
	Oct	1,194,141,375,461.65	13	16.83604		196.9886	0.183733
	Nov	1,190,895,861,947.36	11	16.98295		196.9914	-0.27132
	Dec	1,223,945,179,412.91	11	16.95892		196.9865	2.775212
2016	Jan	1,035,442,146,524.77	11	16.54		197	-15.4018
	Feb	1,197,270,017,844.13	11	16.72		197	15.6291
	March	1,182,969,146,826.31	12	16.82		197	-1.19438
	April	1,191,758,014,165.26	12	16.77311		197	0.743045
	May	1,185,755,328,645.31	12	16.12891		197	-0.50346
	June	1,324,112,399,489.97	12	16.78427		231.7614	11.66762
	July	1,400,613,120,661.45	14	17.13678		294.5722	5.777466
	August	1,422,266,074,243.98	14	17.17659		309.7304	1.546469
	Sept	1,391,639,531,862.37	14	17.08732		305.225	-2.1536
	Oct	1,400,297,218,098.35	14	17.1		305.2125	0.622287
	Nov	1,397,019,748,322.12	14	17.06		305.1818	-0.23424
	Dec	1,422,567,057,486.18	14	17.09		305.2237	1.828893