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# Responsiveness of Nigeria's Short-Term Interest Rates to Changes in the Policy Rate

**Tule, M. K.**

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## **Abstract**

*This paper appraised the efficacy of the Monetary Policy Rate (MPR) as an anchor for other short-term interest rates in the economy. Adopting the vector autoregression approach, the responses of Nigeria's short-term interest rates to changes in the interbank rate (proxy for MPR) was modeled. The paper found that the pass-through from MPR to money market interest rates in the long-run is higher for the prime and lending rates than for changes in the Treasury bill rate and 3-month deposit rate. Overall, there seemed to be an asymmetric impact with an increase or fall in the interbank rate.*

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**Keywords:** Interest rate pass-through, money market rates, vector error correction

**JEL Classification Numbers:** E43, E52, G21

## **I. Introduction**

The cardinal objective of the monetary policy of the Central Bank of Nigeria (CBN) is price stability. The recent modification of its monetary policy framework, beginning end-December, 2006 was to steer the term structure of interest rates towards equilibrium by stabilising short-term interest rates around the MPR. At the time of introduction, the new framework was expected to narrow the spread, stabilise interest rates around the MPR and create a seamless transmission path to achieving key monetary policy objectives. The understanding, though arguably, was that with money supply being endogenously determined, the central bank could influence aggregate liquidity levels through the daily liquidity of the banking system by influencing the direction/movement of the interbank interest rate.

There were palpable challenges militating against the efficacy of the new monetary policy framework. The first was the identification of the operating target. This is due to the fact that CBN does not pre-announce an explicit target for the operational variable and provide refinancing facilities to the banking system through its main refinancing operations. The second was that the time path to achieving the operating target had not been previously determined.

Thus, allowing the overnight interbank interest rate to have an implicit MPR target

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with a symmetric corridor of 200 basis points on the standing facilities was rather arbitrary. The wide corridor apparently suggests an implicit accommodation of 400 basis points spread in short-term interest rates, characterising a general leaning against the wind monetary policy. The outcome since December 2006 and through the heat of the global financial and economic crises shows that short-term interest rates deviated widely from the MPR. The fact that the MPR and other money market interest rates moved in opposite directions, most of the time during the period, was rather paradoxical. The observed movement in market interest rates could be due to extraneous shocks rather than a response to changes in the monetary policy rate.

In this regard, it becomes pertinent to ask what the pattern of pass-through from the MPR to market interest rates is? Other questions that come to mind include: how effective are the intermittent interventions of the CBN in reducing interest rate volatility? Are the short-term interest rates responding to some unanticipated shocks? Or are the banks enjoying arbitrages created by the defined corridor around the MPR? Is the behaviour of short-term interest rates constant or time-varying since the introduction of the new framework? What are the drivers of the perceived distortions in the short-term interest rates?

These questions are derived from the fact that the interbank interest rate is a rate on unsecured interbank lending, thereby incorporating default risks into its premium, while lending by the CBN is collateralised. This implies, therefore, that the CBN lending may not be a perfect substitute for the instrument whose rate it is tacitly targeting because funding and liquidity risks, probably, may alter the path of the resulting market rates in a time varying manner. In addition, anecdotal evidence suggests that the interbank rate has been trending upward and increasingly volatile, requiring interventions by the CBN to alter the path of the market interest rates.

While these issues have been extensively studied and understood in other jurisdictions, there are no clear insights into the issues in Nigeria to help the understanding of the transmission mechanism from MPR to short-term market rates. It is, therefore, necessary to fill this gap by attempting to provide answers to the above raised questions. Consequently, analysis of CBN policy actions vis-à-vis the responsiveness of short-term market rates was conducted.

To achieve this objective, the paper is structured into six sections. Following this introduction, the paper provided insights to the theory of the anchor rate and banks' short-term interest rate behaviour as a guide to the empirical work in Section 2. In Section 3, the paper examined the CBN monetary policy framework since independence. Section 4 reviewed Nigeria's basic interest rate data. Section 5, presented the methodology and the results, while Section 6 summarises and concludes the paper.

## **II. Literature Review**

The consistent assessment of inflation developments and prospects is key in the conduct of monetary policy. Although central banks do not directly control inflation, they however, do have the instruments to affect its determinants. These variables are known as "operating targets", and include, among others, the short-term interest rates. Given a regime of monetary policy, involving an interest rate corridor (with reserve requirement and averaging), the overnight interest rate, on any day within the reserve maintenance period, should equal the rate expected to prevail on the last day of the maintenance period, based on current information. The overnight interest rate expected on the last day of the maintenance period should also equal the probability of the weighted average of the rates of the standing facilities. The literature is replete with evidence that banks' lending rates are key indicators of the marginal cost of short-term external funding in the economy (De Bondt, 2002; Borio and Fritz, 1995 and Kobayashi, 2007).

As shown by Borio and Fritz (1995), Bredin et. al., (2002), de Bondt (2002) and Kobayashi (2007), the policy rate is the single most important determinant of the opportunity cost of funds for banks and, therefore, a critical input into their loan decision making model. However, where banks do not respond visibly to changes in the policy rate, due to the existence of structural rigidities which prevent the transmission of monetary policy impulses from the policy rates, then, they place higher premium on the inter-bank money market rate. Banks, therefore, employ the money market rate to benchmark decisions affecting the optimisation of their objective functions such as growth in asset size and profits, as well as a determination of their marginal cost of funds. Klein (1971) and Monti (1971) demonstrated the relevance of the interbank rate, which related the marginal revenue (cost) of the other assets.

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Although the interbank rate is beyond the control of the intermediary, nevertheless, under certain conditions, it is an ideal representation for gauging banks' marginal cost of funds because it initiates and intermediates the changes anticipated by monetary policy. As shown by Borio and Fritz (1995), under volatile money market conditions, the interbank rate may be a better indicator of persistent rather than the transitory movement of rates.

As Stiglitz and Weiss (1981) suggested, interest rate stickiness might lead to credit rationing which might affect the effectiveness of monetary policy. Given constant credit risk premium in a perfectly competitive market conditions, the loan rate is expected to match squarely with marginal cost of fund. Klemperer (1987) showed that this movement would generally be small in non-collusive monopolistic and oligopolistic market structures. However, when changes in the policy rate were anticipated, they might be factored into the retail interest rates.

As Bredin and O'Reilly (2004) indicated, the term structure of interest rates also influenced the behaviour of interest rates in the economy. The proportion of retail interest rates, which was fixed or variable determined the relative importance of movements in short or long-term interest rates, and this impacted on the degree of pass-through from policy rate to money market rates, and to retail rates. Sarno and Thornton (2000) showed that there might be a more than unidirectional causality between the interbank rate and the retail rates.

Mozzami (1999) and Angeloni and Ehrmann (2003) estimated the dynamics of the response of retail interest rates to changes in either the policy rate or the market interest rate. Adopting single equation models in error correction specifications, they estimated the degree of interest rates pass through in a number of industrial and emerging market economies. The results revealed significant differences in the degree of response of the market rates both across interest rates and across countries.

Mojon (2000) and Cottarelli and Kourelis (1994) further investigated the pass-through of policy rates into market rate by relating country specific characteristics to the degree of pass-through in the short-run. Using panel data, they related the degree of pass-through to the extent of banking competition, money market factors, financial structure and banks' cost of funds in the short-run. The studies revealed that high retail prices, absence of competition and volatility of money market rates determined the degree of response of short-term rates to changes in the policy rate.

Cottarelli and Kourelis (1994) showed that banks were not neutral conveyors of monetary policies as their internal adjustment mechanisms tended to produce rates, which were characterised by a lower variance than the policy rate. Moreover, the reaction of banks to changes in the policy rate was often tinted with influences of market competition, perception and expectations about the future performance of the market. Similarly, sticky changes in the market rate lent credence to the views of Rotemberg and Saloner (1987) and Hannah and Berger (1991) that price stickiness increased with market concentration and that the speed of adjustment of the responsiveness of market rates to changes in the policy rate increased with anticipation of persistence in changes to the policy rate.

### III. Interest Rates Trends and Selected Macroeconomic Indicators in Nigeria

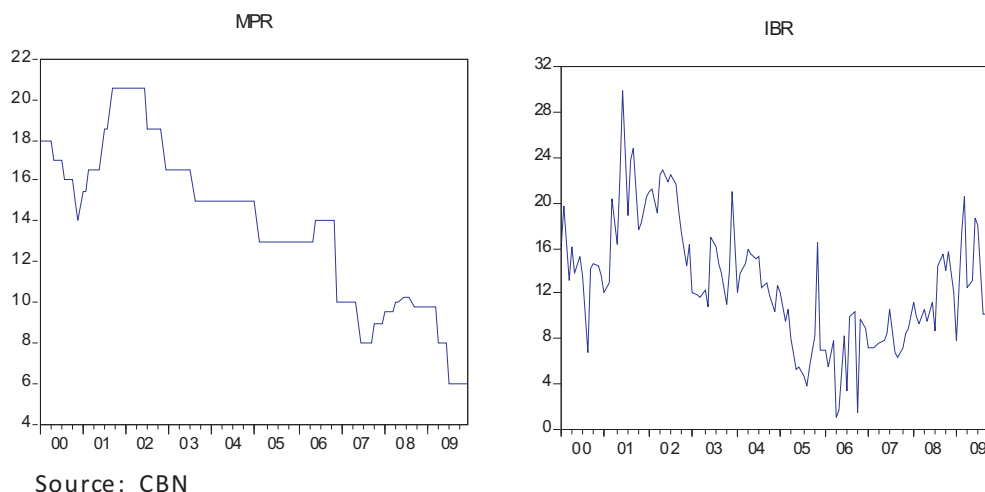
Following the economic and trade liberalisation drive, which led to the introduction of the Structural Adjustment Programme (SAP) in 1986, the CBN embarked on the liberalisation of the financial markets and the introduction of a market-based interest rate policy. However, in some few instances of serious inflationary pressure and general market failure, temporary caps were placed on upward interest rate movements as a necessary condition for stabilising the market and forestalling negative spill-over to other sectors of the economy. Since 1996, however, interest rates were fully deregulated, with the market playing a key role in credit pricing and allocation. The CBN, however, retained its discretion to intervene in the market to ensure orderliness and credibility.

Figure 1 shows the monthly trend in the monetary policy and interbank interest rate over the last decade. The monetary policy rate witnessed an initial decline in 2000, and then rose from 2001 to 2002 before declining steadily till 2009. This reflected the expansionary monetary policy stance in line with the prevailing liquidity conditions. The increasing oil prices and high aggregate demand as well as increased government spending necessitated the expansion in money supply with further pressure on domestic prices and the foreign exchange rate during the period.

The monthly average interbank call rate maintained a gradual downward trend from 2001 to end-2006, with spikes from 2003 to 2005, but rose steadily thereafter. It was, however, generally volatile throughout the period. The figures indicated that the interbank and monetary policy rates were non-correlated. There were signs of lagged response between the interbank and monetary policy rate; however, the lagged impact was largely a random walk. The correlation between the MPR and the IBR is positive, but low at 15.2 per cent<sup>5</sup>.

<sup>5</sup>For details see table 2 in section 5

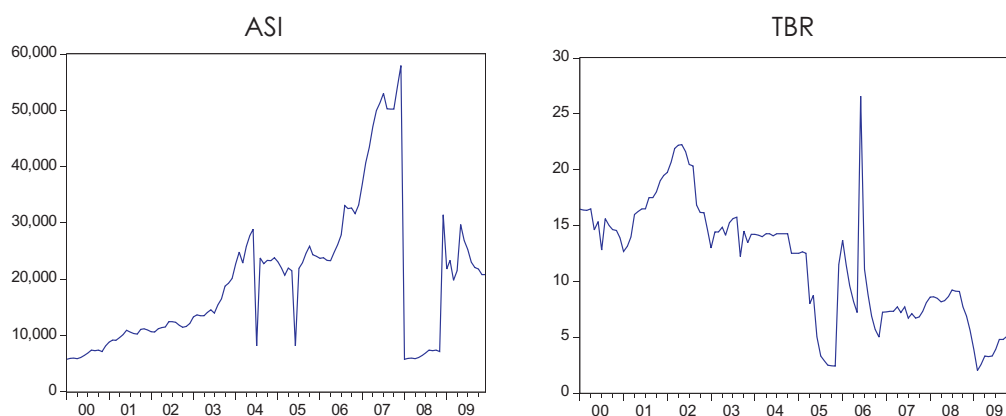
**Figure 1: Monetary Policy and Interbank Interest Rates**



Source: CBN

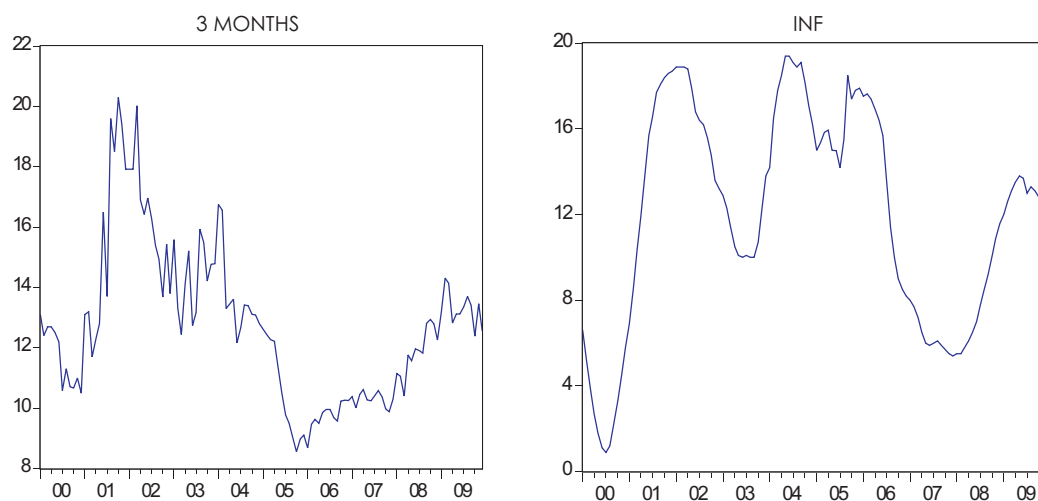
Since 2006, specifically after the bank consolidation exercise, the interbank rate experienced upward surge, contrary to several cuts in the official interest rate during the period. Several reasons were advanced, which include the argument that banks were not trading amongst themselves at the interbank market because of counter-party risks and other non-market related altruistic egoism of the major banks. The Nigerian banking system is generally oligopolistic in structure. Between July and August, 2009, the CBN embarked on new policy initiatives geared towards reducing the interbank rate and promoting effective trading amongst banks at the interbank market. These new initiatives included the guarantee of interbank market transactions, the retention of the official interest rate at 6.0 per cent since July 2009, and the establishment of the Asset Management Corporation of Nigeria. These new measures led to a gradual decline in the inter-bank interest rate and a fast narrowing of the spread between lending and deposit rates.

Figure 2 indicates charts for the All Share Index (ASI) and the Treasury Bill Rate (TBR). As shown in the correlation matrix, the two variables have a negative correlation of 21.2 per cent. The ASI trended upward with occasional drops in 2004 and 2005. However, the market witnessed substantial turbulence at end-2007 and throughout 2008, following the shock of the global financial and economic crises. Since 2009, the market has been struggling to rediscover itself. The movement in the TBR was not particularly determinable but exhibited clear stochastic trend as its initial upward movement between 2001 and 2002 was followed by a gradual downward trend. Consequently, from a high of 23.0 per cent in 2002, the TBR dropped to a low of 3.0 per cent in 2005 before it rose astronomically to 15.0 per cent and peaked at above 25.0 per cent at end-2005 and in 2006, respectively.

**Figure 2: All Share Index and Treasury Bill Rate**

Source: ASI is from Nigeria Stock Exchange, TBR from CBN

The 3-month interest rates exhibited signs of high volatility throughout the period as shown in Figure 3. From an initial drop in 2000, the 3-months interest rate rose from about 10.3 per cent in 2000 to peak at over 20.0 per cent in 2001 before it declined to a low of 8.3 per cent in 2005. There were occasional spikes throughout the period.

**Figure 3: Inflation and 3-Months Interest Rates**

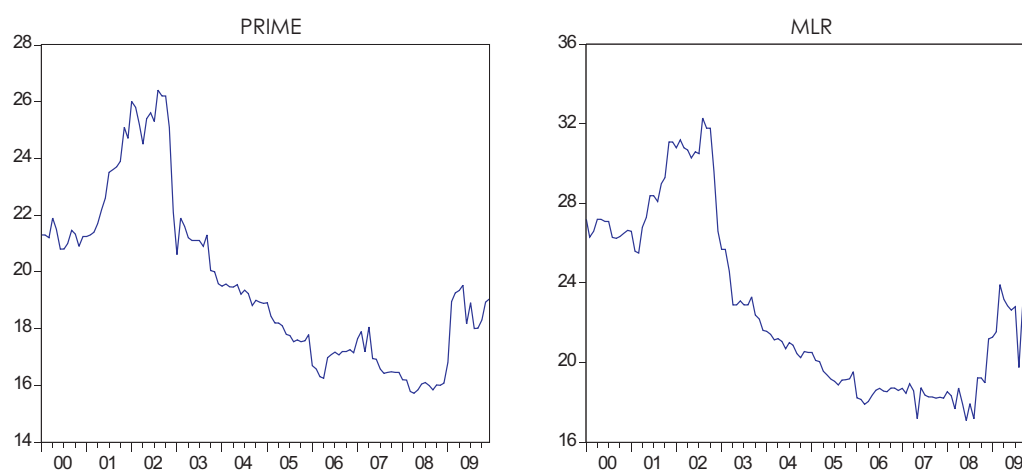
Source: -3-Months Data from CBN, INF from National Bureau of Statistics



The smooth inflation curve suggests some degree of random walk. Generally, the inflation rate moved from a low of under 2.0 per cent in 2000 to a high of 19.0 per cent in 2004 before it declined generally. However, the inflation rate did not exhibit the high volatility shown by the other rates. Inflation was weakly correlated with the other variables. With the 3-months rate, inflation had a correlation of 40.7 per cent over the reviewed period.

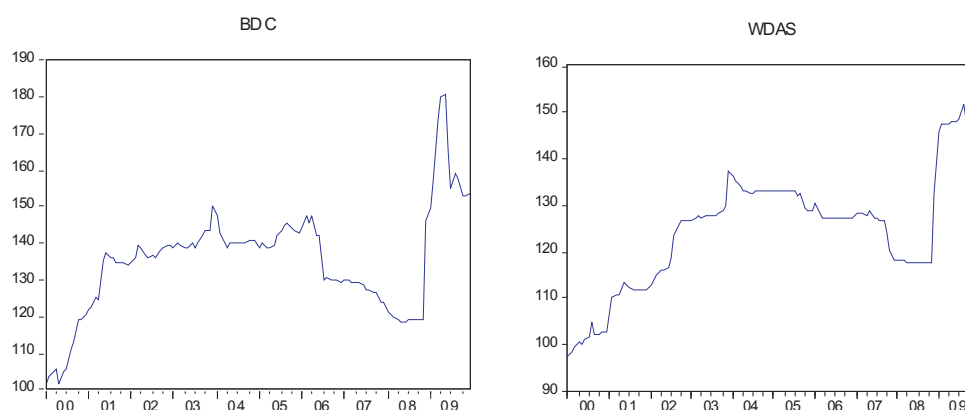
The prime and maximum lending rates had very high correlations as shown in Figure 4. The two variables were 95.9 per cent correlated. From an initial but steady rise in 2000, both rates reached a climax in 2002 at 26.2 per cent (32.0 per cent for the MLR) before trended downward to 16.0 per cent (18.0 per cent for MLR) in 2008.

**Figure 4: Maximum and Prime Lending Rates**



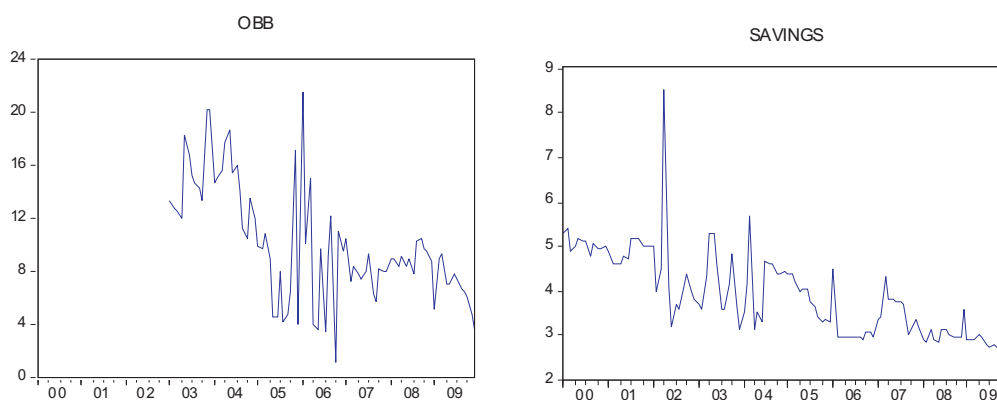
Source: Prime and MLR were sourced from CBN

The Bureau de change (BDC) and wDAS exchange rates depreciated substantially over the last decade, with the BDC rate depreciating faster than the wDAS. The cross correlations indicated that the two rates are positive highly correlated (about 88.08 per cent). The implication is that the rate in either segment of the foreign exchange market was influenced largely by rates in the other market. As precedence indicates, the official exchange rate appears to have been influenced largely by developments in the free market Bureau de change.

**Figure 5: Bureau de Change and Official Exchange Rates**

Source: CBN

While the Open Buy Back (OBB) exhibited high volatility during the review period, the savings interest rate was relatively muted. The OBB is a collateralised rate that should be largely insulated from the vagaries of market risks. It plunged from a high of 20.0 per cent in 2003 to 2.0 per cent in 2006. The savings rate decelerated gradually towards 3.0 per cent, except for the hike in 2002.

**Fig. 6: Open Buy Back (OBB) and Savings Interest Rate**

Source: CBN

## IV. Methodology

### IV.1 Data

Monthly data over the period January 2000 - August 2014 was used and they were obtained from the CBN Statistical Bulletin. All variables were represented in percentages. Within this period, four fundamental issues were noted for altering the course of monetary policy and interest rate developments in the country. A banking consolidation exercise was carried out, effective December 2005. This development reduced the number of deposit money banks (DMBs) from 89 to 25. In December 2006, a new monetary policy framework was introduced, with a new MPR, to replace the erstwhile Minimum Rediscount Rate (MRR). A feature of the new framework was the establishment of a lending and deposit facilities and a symmetric corridor of 400 basis points around the MPR. In July 2008, the global economy began to witness signs of financial crisis which, by 2009 had evolved into the global financial and economic crises. In July 2009, the Monetary Policy Committee (MPC) of the CBN de-risked the money market at the heat of the global financial and economic crises to encourage interbank lending. That policy move led to a crash of short-term interest rates below historical levels. The MPR does not change as frequently as do other variables in the paper. Consequently, this paper used the interbank call rate as a proxy for the MPR in the models.

### IV.2 Time Series Properties

A unit root test was conducted on the variables using the Augmented Dickey Fuller tests under the option "*trend and intercept*". The lag length of 3 was chosen based on information provided by the Schwarz information criteria. The unit root test assumes that the series has a unit root and that it is an autoregressive of order 1 [AR (1) process of order 1] that is  $y_t = \alpha y_{t-1} + u_t$ ; was tested against null hypothesis that  $H_0: \alpha = 1$ . The alternate hypothesis is that  $H_1: \alpha < 1$ . The assumption is that  $y_t$  of the null hypothesis is non-stationary and is a random walk without drift. In the alternate hypothesis,  $y_t$  is a stationary AR (1) process. Dickey and Fuller (1979, 1981) assumed that the disturbance term is white noise. The Dickey Fuller test is based on the equation:

$$\Delta y_t = \alpha + \beta_t + \rho y_{t-1} + \theta_1 \Delta y_{t-1} + \theta_2 \Delta y_{t-2} + \dots + \epsilon_t \quad (1)$$

$$\epsilon_t = \alpha + \beta_t + \rho y_{t-1} + \sum \theta_t \Delta y_{t-1} \quad (2)$$

Where:

$\epsilon_t$  is the white noise residual in the model. The lags are included to eliminate the existence of serial correlation in the model.

The co-integration properties of the data was examined using the standard Johansen procedure, leading to the estimation of the vector error correction models, accounting for the dynamics of the short-run changes in the long-term interest rate.

### V.3 Models

In an efficient market framework, the MPR should determine long-term fluctuations in short-term interest rates, and also serve as the common factor driving the market interest rates. The theory of interest rate pass-through postulates a zero-change (i.e. constant) mark-up. Using co-integration techniques, the identified co-integrating vectors were, therefore, expected to explain the sources of disequilibrium in the money market rates and the persistence in the wide deviations from equilibrium. A vector autoregressive model was specified to analyse the pass-through impact to other market interest rates to adjustments in the policy rate.

#### IV.3.1 Vector Autoregression (VAR)

The VAR model was employed to show the channels through which the interbank interest rate/MPR may affect other money market rates. It shows how a shock to one variable in form of a one unit increase in the error term, for that variable, causes the variables in the system to vary in subsequent periods, assuming no other shocks disturbed the system at the same time. Consequently, the VAR equations, as specified, were assumed to sufficiently capture the combined effects of all the structural relationships among the variables

The mathematical representation of the VAR relates the current realised value of a variable as dependent on its lagged values and a current white noise innovation as:

$$Y_t = \varepsilon_t + \alpha_0 + \sum_{j=1}^q \alpha_j Y_{t-j} \quad (3)$$

This autoregressive specification can be extended to include the lagged values of another variable to the right as shown in equation 4 below:

$$Y_t = \varepsilon_t + \sum_{j=1}^q \alpha_j Y_{t-j} + \alpha_0 + \sum_{j=1}^q \beta_j X_{t-j} \quad (4)$$

To create a vector autoregressive model, we expressed  $X$  in a form similar to equation 4 above. Consequently, equations 4 and 5, taken together, are referred to as the vector autoregressive model.

$$X_t = \varepsilon_{x_t} + \sum_{j=1}^q \tau_j X_{(t-j)} + \gamma_0 + \sum_{j=1}^q \gamma_j Y_{(t-j)} \quad (5)$$

Thus, a  $p^{\text{th}}$  order vector autoregressive model was specified to be of the form:

$$\mathbf{Y}_t = c + \phi_1 \mathbf{Y}_{t-1} + \phi_2 \mathbf{Y}_{t-2} + \dots + \phi_p \mathbf{Y}_{t-p} + \varepsilon_t \quad (6)$$

where:

$\varepsilon_t \sim \text{iidN}(0, \Omega)$ .

$\mathbf{Y}_t$  is a  $n \times 1$  vector of endogenous variables at time  $t$  and  $c$  is the intercept.

The paper adopted relevant diagnostics tests and appropriate lag selection criterion to confirm the stability of the VAR.  $\mathbf{Y}_t$  is a representative of the variable set inter-bank (call) rate as the impulse variable and maximum lending, 3month deposit, Treasury bill, as well as the prime lending rates.

## V. Empirical Results

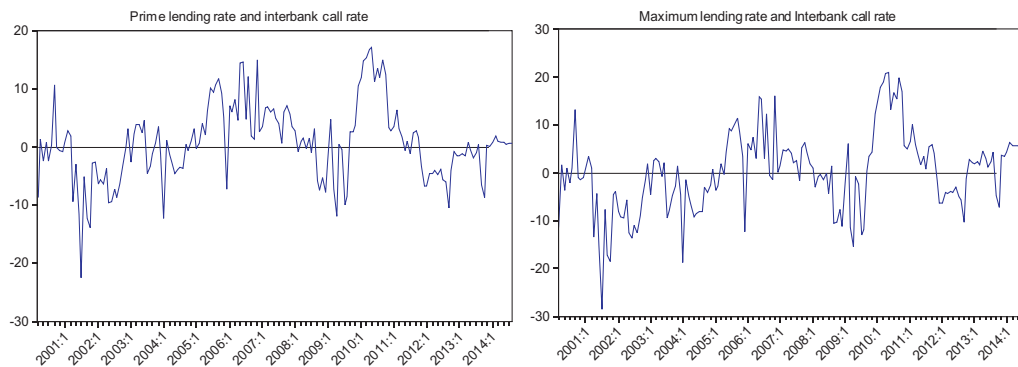
### V.1 Time Series Properties

From the results of the unit root tests, all variables in the models, except the Treasury bill rate had a unit root. The variable was stationary at level. All other variables were stationary only at first-difference. In the evaluation of the existence or otherwise of co-integration, one co-integrating equation was identified for the bivariate VAR case of the selected interest rate variable and the interbank call rate.

### V.2 Results from the Bivariate Vector Error Correction (VEC) Models

To a large extent, the equilibrium errors (Figure 7) derived from the co-integrating relation between the different rates, over the sample period, reflect positive errors in period of monetary policy tightening (i.e. falling interbank rates). Negative equilibrium errors also appear to mimic periods of rising interbank rate.

**Figure 7: Co-integrating Relations of Relevant Interest Rate and the IBCR**



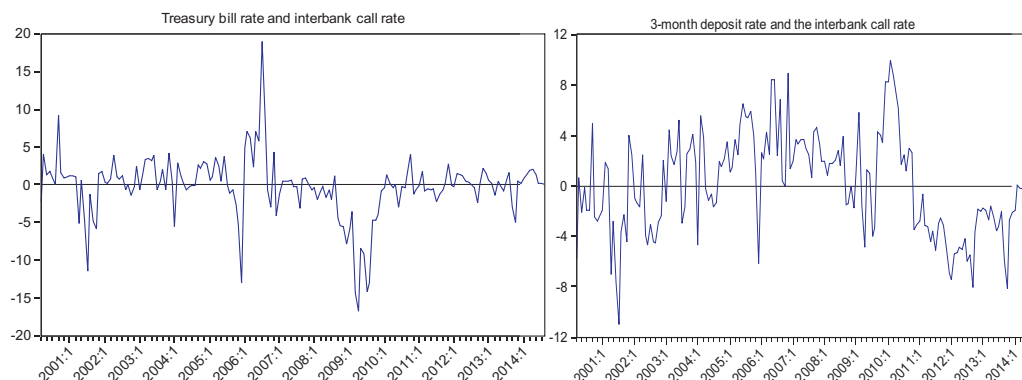
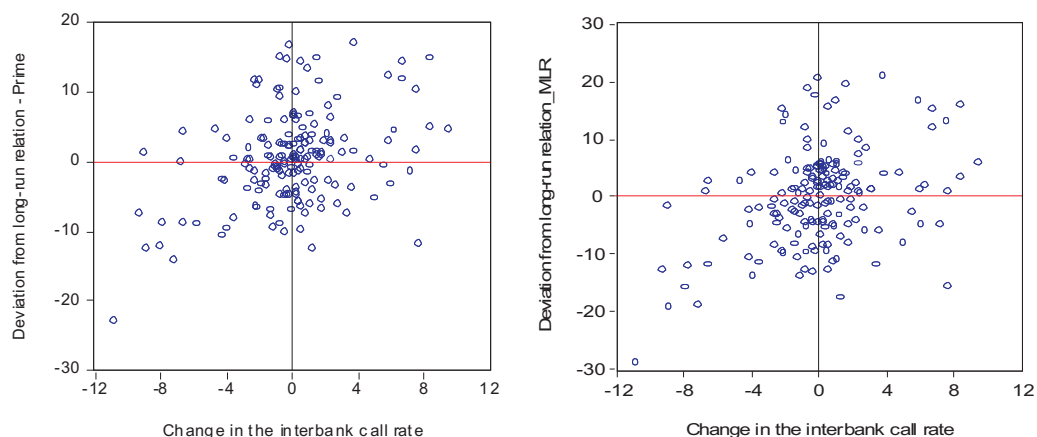
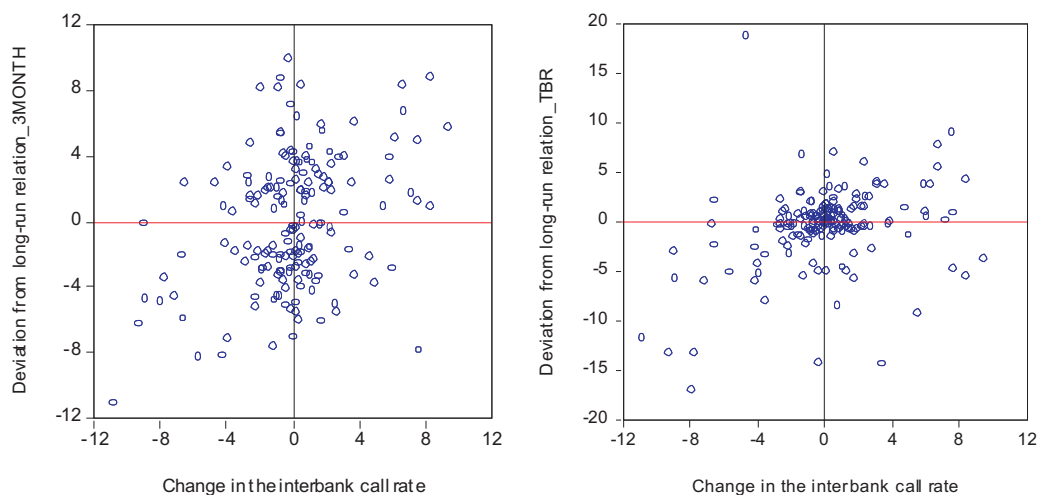


Figure 8 evaluates asymmetric response of various interest rates to changes in the policy rate proxied by the interbank call rate. To examine this, retail rate adjustment is viewed from perspective of deviations from the long-run relations obtained from a bivariate VECM. Following Burgstaller (2005:7), “positive equilibrium errors, in general, are interpreted as representing times of falling policy or market rates. Negative deviations are proposed to stem solely from a more restrictive monetary policy or cost increases in the interbank market”. A scatter plot of the equilibrium error and the change in the interbank call rate indicates an apparent asymmetric showing rather than a perfect correlation between the two indicators.

**Figure 8: Co-integrating Relations between selected interest rates and changes in the IBCR**



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**Table 1: Estimates of Pass-through Parameters**

Interest Rate	Co-integrating Parameter	Impact Multiplier	Long-run Multiplier
Prime lending rate	-0.014	-0.011	1.51
Maximum lending rate	-0.010	0.021	1.91
3-month deposit rate	-0.096	-0.060	0.92
Treasury bill rate	-0.129	-0.030	0.93

Applying the standard Johansen approach with unrestricted constants the co-integrating relations were estimated. From the bivariate VECM results (Table 1), the co-integration parameters and long-run multipliers are differentiated for the various interest rate measures. There is a faster adjustment for the Treasury bill rate (0.129 percentage point) and 3-month deposit rate (0.096 percentage point) within the month the shock takes place; an evidence of the stickiness of lending rates when policy rate is adjusted downward, except if there is a chance of a customer revolt. However, their long-run impact is lower than the prime (1.5 percentage points) and maximum lending rate (1.9 percentage points). The impact in the 3-month deposit rate demonstrates its rigidity to changes in monetary policy, reflecting banks unwillingness to allow market dynamics to dictate the pace of change, given its role as, perhaps, input into bank production.

As noted by Hofmann and Misen (2004), banks have some control on the price setting for rates and follow a mark-up pricing rule as observed by Winker (1999). This eventually results in the high spread between the deposit and lending rates and, possibly, the presence of imperfect competition on markets for loans and deposits. Structural deficiencies in the banking system hinder a smooth transmission of monetary policy. As rightly observed by de Bondt (2002), structural rigidities could prevent the transmission of the monetary policy signals. To compensate for such deficiencies, banks place higher premium on movement in the interbank rate to benchmark decisions affecting the optimisation of their objective functions such as growth in asset size, profits and the determination of their marginal cost of funds. It can also be observed that the magnitude of long-run impact between the prime (1.5) and maximum (1.9) lending rates is also different. It brings out an important behaviour of banks usually to shield and negotiate rates and the timing of the effective date for implementation with their prime customers. The ability of the market to isolate permanent from transitory monetary policy actions determines the impact of monetary policy changes when they do occur. Temporary changes characterise sluggish pass-through effects from the market, but the market may adjust more quickly to permanent policy changes.

In the Nigeria context, competition has been hampered by structural inefficiencies, such as the dominance of a few banks, holding over 50.0 per cent of industry assets; a high component of government deposits held at the banks and the effect of global spill-over on the domestic economy, among others.

### **V.3 Policy Issues**

The results of this paper largely reflect the conditions of the Nigerian financial system, the banking system and money market. The financial system is developing and not sufficiently deep as a global financial centre. The banking system is oligopolistic in nature with a few large banks controlling the market. This non-competitive structure of the banking system encourages collusion as the major banks play market makers and stultify reforms of the system. The absence of competition is fuelled by the presence of a large volume of public sector funds, which are often used to swing the foreign exchange market and frustrate policies that are not desirable by the big banks. The absence of competition for deposits and collusion by the major banks affects the money market, which starved off interbank funds as banks restrain from lending to themselves in that segment of the market preferring to keep their deposits with the central bank or speculate in the foreign exchange market.



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The significant but asymmetric reaction to the interbank rate by all the variables is indicative that the IBR is an ideal representation for gauging banks' marginal cost of funds as it serves to intermediate the changes anticipated by the market to changes in monetary policy. The interbank interest rate is the most appropriate interest rate to play this role in oligopolistic markets as it becomes a reflection of changes in general market conditions rather than the discretionary decisions of individual market players. Besides, under such volatile money market conditions, the interbank rate becomes a better indicator of the persistent rather than the transitory movement in interest rates.

The examination of Nigeria's money market interest rates revealed the absence of steep sloping curves. While more competitive markets are associated with steep sloping interest rate curves, less competitive markets exhibit gentle sloping curves. More importantly, this feature of the interest rate curves in Nigeria has implications for the degree of competition for loan facilities, which is critical in determining the interest rate spreads. Asymmetric information may play a key role in variations in the interest rate spreads but more importantly, for Nigeria, collusion by market participants could be a major factor.

As shown by Thornton (2000), where short-term sources of funds dominate, changes in the interbank rate are likely to impact retail interest rates in the economy faster. However, if capital market sources dominate, the link between the interbank and retail rates would be weaker. With a huge portfolio of short-term public sector deposits, the Nigerian banking system operates at the short end of the market. Consequently, this reflects in the quick return to equilibrium of most variables due to innovations in the interbank rate, while changes in the MPR take longer period to return to equilibrium.

The absence of competition for funds by the market participants significantly impacts the responses of the variables to innovations in the policy rate. As Cottarelli and Kourelis (1994) pointed out, the reaction of banks to changes in the policy rate is often tinted with influences of market competition, perception and expectations on future price developments. Banks are not neutral conveyors of monetary policy impulses. Consequently, their internal adjustment mechanisms produce rates which are characterised by a low speed of adjustment to changes in the policy rate. Given these conditions, the speed of adjustment was expected to be very low because, as found by Hannah and Berger (1989), price stickiness increases with market concentration and the speed of adjustment to changes in the policy rate with anticipation of persistence in changes to policy.

## **VI. Summary and Conclusion**

The paper examined the responsiveness of interbank interest rates to changes in the MPR, as well as other short-term interest rates. The paper found that while external shocks might have had serious impact on the outcomes of monetary policy over the last 10 years, the more fundamental issues related to the absence of competition in the banking sector. The oligopolistic structure of the banking system, which encourages collusion by the big banks, has undermined the transmission of monetary policy impulses through the money market, thereby leading to very large responsive lags. A deliberate policy to reduce the size of banks would lead to the emergence of strong and effective banking institutions that are more competitive.

The large volume of public sector funds has discouraged competition and depth of the banking system as banks do not make efforts to compete for customer deposits. On the other hand, fiscal operations of the government have ostracised a large section of customer base, as banks prefer granting loans to government than the private sector. This crowding out effect has equally affected the depth of the banking system, while the laissez-faire banking attitude to granting loans has frustrated the transmission mechanism of monetary policy impulses to the real economy.

A gradual withdrawal of government funds from the deposit money banks is advocated if monetary policy would be effective. A situation where banking sector liquidity cycles are defined by injection and withdrawal of public sector deposits with attendant gyrations in money market interest rates is anti-thetical to effective monetary policy. Indeed, high volatility in the interbank interest rates has been a major frustrating factor to the effectiveness of monetary policy in Nigeria. A more prudent regime of fiscal operations is advocated to address the crowding out effect of government fiscal operations and resort to deficit financing.

The ability of the market to isolate permanent monetary policy action from transitory one determines the impact of monetary policy changes. The CBN is responsible for understanding the impulse of the market at all times. At the moment, knowledge gap seem to exist between the Bank and the market. While the market appears to make a clear distinction between transitory and permanent monetary policy actions, the monetary authorities do not seem to understand market perception of its policy actions. Consequently, the CBN expects the market to react always and in a particular magnitude and direction to its policy changes. This is misleading to the authorities as the impression could be conveyed that the market does not react to changes in the policy rate when indeed the market may have perceived such changes as transitory.

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Since the interbank interest rate is the ideal variable for determining the banks' marginal cost of funds in volatile oligopolistic markets, trying to stabilise the interbank rate as an operational target variable without addressing the structural rigidities in the market would further raise the rates as the market is quick to identify and penalise official meddling. Besides, banks use the interbank rate to benchmark their optimising decisions concerning growth in asset size and profits. The CBN needs to encourage competition for both funds and loans in the banking system and break up the oligopolistic structure of the banking system to ensure the emergence of a more competitive banking system. There is also the need to alter the liquidity cycle in the banking system and transform it from short-term dominated to long-term dominated sources of funds.

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