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Central Bank Communication and Monetary Policy Effectiveness: Empirical Evidence from Nigeria

Ekor, Maxwell and Adeniyi, Oluwatosin and Saka, Jimoh

June 2013

Online at <https://mpa.ub.uni-muenchen.de/82630/>
MPRA Paper No. 82630, posted 16 Nov 2017 14:53 UTC

Central Bank Communication and Monetary Policy Effectiveness: Empirical Evidence from Nigeria

Abstract: The study examines the impact of central bank communication on monetary policy in Nigeria by applying the standard deviation measure of volatility and the vector autoregressive approach. The findings show that inflation and markets volatilities reduced during the period of improved central bank communication. The money market responded positively to central bank communication and reverted faster to equilibrium compared with the stock market which responded negatively and reverted slower to equilibrium. Central bank communication is also able to explain some variation in the money and stock markets. The policy implications of the findings include the need for the Central Bank of Nigeria to continue to improve on its communications strategy as this has helped reduce inflation and markets volatility. In addition, the interest rate channel of the transmission mechanism should be accorded greater priority compared to the asset channel as the money market reverted faster to equilibrium compared to the stock market in the event of a shock.

Keywords: Central bank communication, Impulse response, Variance decomposition

JEL Classification: D83, E52, E85, G13, G14

1. Introduction

The way central banks communicate to the public determines the level of transparency and credibility of monetary policy. One very important aspect of central bank communication is that it *'creates news and raises the signal-to-noise ratio by eliminating guessing on the part of the public'* (Sanusi, 2011). Moreover, communication clarifies public concerns about the instruments and goals of monetary policy. This way the underlying reasons behind the decisions made by the monetary authorities are better understood (Winkers, 2000). Also, communication enhances the predictability of monetary policy decisions and by extension its transparency. Given that transparency is defined as *'the absence of asymmetric information between policy makers and the public'*, the expectation is that markets should be able to anticipate monetary policy decisions reasonably well. Hence, it remains unarguable that in the event of poor communication by the central bank, market volatility may become more pronounced.

In line with global best practices, the Central Bank of Nigeria (CBN) in recent years has moved towards greater policy transparency and credibility by improving the way it communicates with the public. Despite this noticeable improvement, there is still very little or no empirical evidence on the link between central bank communication and monetary policy outcomes in Nigeria. Therefore, investigating the communication strategy of the CBN and providing some insights into how this has influenced monetary policy is of essence. This is the key contribution of this paper to the literature. The approach for this study is a combination of both descriptive and empirical techniques in order to achieve a number of objectives. The broad objective is to evaluate the CBN's communication strategy while the specific one is to examine the interaction between the communication strategy and monetary policy variables.

We review the literature on central bank communication in section 2 while section 3 provides a discussion on CBN's communications strategy. The subsequent Section 4 offers a snapshot of monetary policy since 2004 – the year the CBN began issuing its monetary policy communiqué publicly. Section 5 presents the methodology and section 6 presents the data and the empirical results. Section 7 provides the policy implications of the findings.

2. Literature review

The literature on central bank communication and how it affects monetary policy is still emerging. The consensus in the literature is that communication boosts the transparency of policy and ultimately improves economic efficiency.

The study by Guthrie and Wright (2000) found that the Reserve Bank of New Zealand used its communication in an organized and highly effectual way for controlling short-term rates. Kohn and Sack (2003) were able to explain that statements by the United States Federal Reserve Chairman about the monetary policy have a significant effect on the volatility of short-term interest rates. The work of Demiralp and Jorda (2003) also provide that public pronouncements by the Federal Reserve moved short-term interest rates rather than the much-perceived liquidity channel of open market operations. Bernanke et al. (2004) find that the financial markets in the United States point significant importance to announcements that include an indication about the future path of policy.

In a study meant to show how the Bank of England's communication affected markets, Haldane and Read (2000) offer proof that the effect of monetary policy decisions on short-term interest rates had reduced over the years, an indication that information asymmetries about the economy have been reduced. Andersson et al. (2001) conducted a study for the Swedish Riksbank and found that the Bank's communication played an important role in influencing financial markets. Similarly, Siklos and Bohl (2003) conducted a study for the Bundesbank and found that communication was able to explain a significant variation in the financial markets. All these clearly supports the view that central banks' communication influences the workings of financial markets in a significant manner.

The effects of communication have also been studied with respect to how they affect key economic indicators. For example, the work of Jansen and de Haan (2004a) for the European Central Bank (ECB) as well as that of Fratzscher (2004) for the G3 monetary authorities analyzed the effect of communication on exchange rates. While the former found some effect on the volatility of the euro, the latter obtained more systematic evidence in favour of effectiveness for all G3 central banks in changing the level and volatility of exchange rates in the desired direction. With other words, the results on the volatility impact of central bank communication are mixed.

The literature on central bank communication and monetary policy is still developing in Nigeria as in the wider literature. Most empirical studies on monetary policy for Nigeria have dwelled on other topical issues like monetary policy effectiveness and fiscal policy, monetary policy and economic growth, monetary policy and stock market performance among others. However, a few pioneering studies on the current subject matter have been carried out. One of such is Sanusi (2012) who looked at the signaling effects of monetary policy using evidence from the new central bank of Nigeria's communication regime. Using daily data for the period 2005-2011 to

estimate the effects of monetary policy signals on the Nigeria Interbank Offer Rates, the study found that rates are significantly more volatile in weeks coinciding with monetary policy committee meetings. The study therefore posited that central bank communication is potentially a viable tool for monetary policy implementation in Nigeria. Also, Salisu (2012) assessed the impact of communication by the CBN on stock prices in the Nigerian stock market. Applying Exponential Generalized Auto Regressive Conditional Heteroscedasticity (EGARCH) model, the study found that communication impacted significantly on stock prices and reduced volatility in the stock market. However, neither of these studies explicitly relates central bank communication with monetary policy outcomes. Specifically, we critically examine the speeches of some CBN governors and attempt to relate this to the behaviour of selected monetary aggregates. Furthermore, the impulse response and variance decomposition analyses conducted in the present paper are not covered in earlier studies.

Following from the review of the literature, it is important that an overview of the communication strategy of the CBN be provided. This is the focus of the next section.

3. Overview of the communication strategy of the Central Bank of Nigeria

Table 1 shows the communication strategy of the CBN with those of the Federal Reserve Bank of the US, the Bank of England (BOE) and the European Central Bank (ECB). During the monetary policy committee meetings, the CBN governor who is also the chairman of the committee usually speaks last after other members have presented their views. This follows the pattern of the BOE and ECB, where the chairmen also speak last. The FED's strategy is different in this regard as the chairman takes the lead in presenting his policy proposal. The CBN, like the three comparator central banks, provides press release after interest rate decisions have been made. This usually takes the form of a 'Policy Communiqué. According to Sanusi (2012) 'the content of the press-statement includes mainly the decisions reached and the basis for such decisions and this helps reduce noise that a policy announcement may generate.' Apart from publishing the communiqué on its website, the CBN also publish the communiqué in selected newspapers with wide coverage.¹ This strategy may be aimed at further expanding the reach and publicity of its interest rate decision since internet penetration in Nigeria is still relatively low (estimated at only 28 users per 100 people by the World Bank in 2011).

Table 1: Communications Strategy of the key Central Banks

Strategy	FED	BOE	ECB	CBN
Modus operandi during Meeting	Chairman speaks first	Chairman speaks last.	Chairman speaks last.	Chairman speaks last
Press release after interest rate decision	Yes	Yes	Yes	Yes
Press conference & question/answer	No	No	Yes	Yes
Minutes of meeting	Yes	Yes	No	Yes
Video of meeting	Yes	Yes	No	Yes
Publish information on voting pattern	Yes	Yes	Yes	Yes
Additional sources of information	Yes	Yes	No	Yes
Publish Governor's speeches/presentations	Yes	Yes	Yes	Yes
Publish members speeches/presentations	Yes	Yes	Yes	No

Source: Author's Compilation

¹ See for example ThisDay Newspaper 12 June 2013, pages 44J – 46 and BusinessDay Newspaper 12 June 2013, pages A4 – A8

The CBN in line with the ECB's strategy holds a press conference after its interest rate decision meeting which also involves a question and answer session to explain the rationale for its decisions. This press conference involves the invitation of the media, both print and electronic, as well as other stakeholders. The possible rationale for this is to provide the formal platform for clarifying grey areas with respect to the interest rate decision. Such clarifications are also expected to be properly disseminated by the invited media practitioners who then take on the consequent duty of providing the public with further insight into why certain decisions were taken by the monetary policy committee. With respect to providing information on the voting pattern of the monetary policy committee members, the CBN has been doing this since January 2011, and this follows the strategy of the FED, BOE and the ECB.

The CBN provides additional information concerning monetary policy beyond those provided through the press release and the press conference, for example, through briefing of the national assembly as provided by the law. The BOE provides quarterly inflation report and press conference to provide further explanations on its decisions. The FED provides the Congress with a semi-annual report on monetary policy issues as well as a summary of decision plus balance-of-risks assessment over the foreseeable horizon. While the CBN publishes the speeches and presentations of the governor on its website, it does not provide such information for other members of the monetary policy committee, contrary to the strategy of the FED, BOE and the ECB.

While it is true that most of the monetary policy committee members give occasional speeches and presentations, the non-publication of these by the CBN on its website makes the members less visible and known to the public. For instance, apart from the interview by the Deputy Governor in charge of banking regulation, Tunde Lemo, on 19 September 2012, the CBN only publishes the speeches and presentations of the governor.

Taking a cue from Ehrmann and Fratzscher (2004), the speeches and presentations of the CBN governor and chairman of the monetary policy committee, Mallam Sanusi L. Sanusi, are classified into monetary policy related, economy related and 'others'. This classification is then compared with those of the predecessors Professor Chukwuma C. Soludo who was the CBN governor between May 31st 2004 and May 2009 and Mr. Joseph Sanusi who was head of the apex bank between May 30th 1999 and May 30th 2004 (For details on all these speeches see Tables 1-3 in Appendix A). Monetary policy related speeches and presentations are those that focus mainly on monetary policy matters and operations as well as those specific to exchange rate, interest rate and inflation. On the contrary, the speeches and presentations that are economy related are those that dwell on economic growth and development, poverty reduction, small and medium scale businesses, etc., while 'Others' are those that are neither monetary policy or economy related. The rationale for this classification is that the markets tend to gauge monetary policy sentiment if more of the speeches and presentations are monetary policy related.

Table 2 and Figure 1 show that Mallam Sanusi L. Sanusi had made a total of 16 speeches and presentations as at 31 May 2013 with none classified as monetary policy related. Specifically, while 15 or 93.7% are economy related only 1 or 6.2% is categorised as 'others'. For professor Soludo who delivered a total of 47 speeches and presentations during his 5-year leadership in the CBN, 11 or 23.4% are monetary policy related while 35 or 74.5% are economy related and only

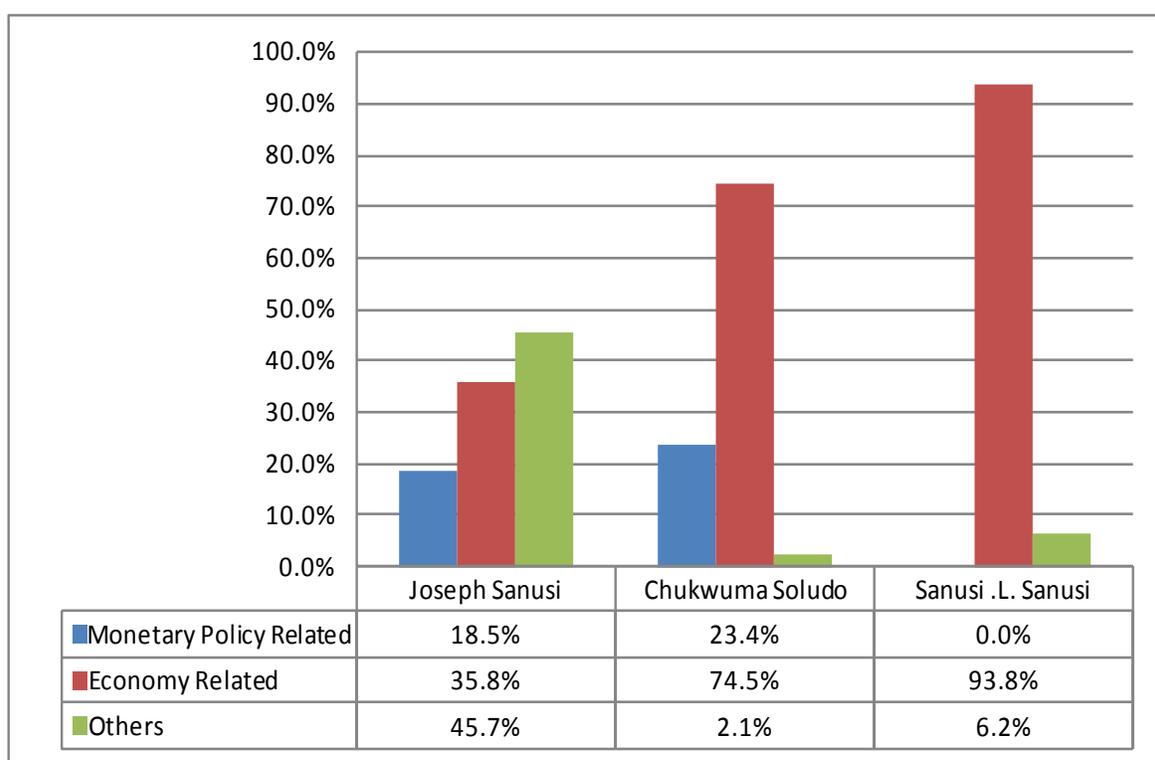
one or 2.1% classified as ‘others’. Mr. Joseph Sanusi had a total of 81 speeches with 15 or 18.5% classified as monetary policy related while 29 or 35.8% are economy related and 37 or 45.7% classified as ‘others’.

Table 2: Classification of speeches by CBN Governors

Governor	Total speeches/presentations	Speeches related to monetary policy	Speeches related to economy	Others
Joseph Sanusi	81	15	29	37
Chukwuma Soludo	47	11	35	1
Sanusi.L. Sanusi	16	0	15	1

Source: Compiled from CBN Website

Figure 1: Classification of speeches by CBN Governors



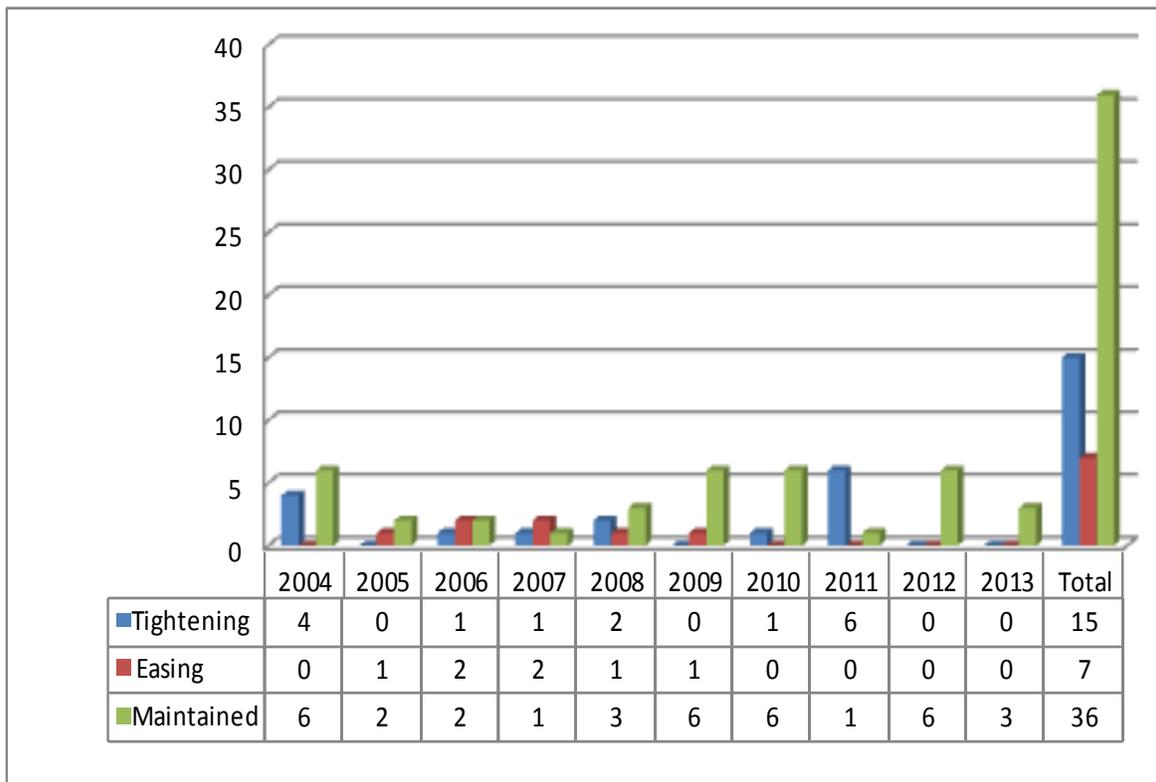
Source: Author’s Classifications

Although Mallam Sanusi L. Sanusi is yet to complete his 5-year tenure as the CBN governor, comparing his speeches with those of Professor Soludo and Mr. Joseph Sanusi is still instructive. This is because in the first four years in office, which is between June 2009 and May 2013, he produced a total of 16 speeches with most of them being economy- related. Therefore, there is the likelihood that this trend might not change significantly in the fifth and final year. In other words, the ratio of Mallam Sanusi’s speeches that can be categorized as monetary policy related is likely to fall short of those of his immediate predecessors.

4. Review of monetary policy since 2004

Since this study aims to ascertain how CBN communication has affected monetary policy, the review commences from 2004 because that is the year the CBN started releasing its monetary policy communiqué. Figure 2 shows that in 2004, the CBN held 10 meetings on monetary policy with the main policy instrument being the withdrawal of public sector funds from commercial banks. However, the use of interest rate instrument, then known as the Minimum Rediscount Rate (MRR), saw the CBN increasing the benchmark rate four times while leaving it unchanged six times. In 2005 the interest rate committee met only three times and the withdrawal of public sector funds remained a key policy instrument while the MRR was left unchanged twice and was reduced once. Other instruments used include the exchange rate band as well as the cash reserve ratio (CRR). By year 2006, the use of public sector funds withdrawal as a policy instrument was reduced and the MRR was increased once and left unchanged twice.

Figure 2: Breakdown of monetary policy decisions between 2004 and 2013



Source: Compiled from CBN monetary policy communiqués

Due to the less than impressive performance of the MRR as the main policy instrument, the CBN on 4th December 2006 introduced the Monetary Policy Rate (MPR). The MPR unlike the MRR was meant to determine the lower and upper bands of the CBN's standing loan facility to banks and discount houses as well as act as the nominal anchor for other rates. With the change in monetary policy framework late in 2006, the expectation was for an improved monetary policy performance in 2007. To this end, the committee on interest rate met five times that year and

increased the MPR once, retained it once and reduced it twice.² In 2008 a total of six meetings were held including a special meeting due to the general effects of the global economic crisis on the economy (See Figure 2). Specifically, while the MPR was left unchanged during the first meeting in the year, it was increased in the second and third meetings and then left unchanged in the fourth meeting before it was reduced in the special meeting on 18th September 2008. In the last meeting for 2008, the MPR was left unchanged at 9.75%.

In 2009, a total of seven meetings were held by the interest rate committee with no contractionary decision as the MPR was reduced once and left unchanged six times. Other policy instruments applied that year include, but not limited to, the normal open market operations, reintroduction of the Retail Dutch Auction System (RDAS), moral suasion and quantitative easing due to the effects of the global economic crisis. The trend continued in 2010 as the MPR was increased only once while it was left unchanged six times. The main departure from previous years was the publishing of attendance of the interest rate committee in the September 2010 meeting. By 2011 the move towards greater transparency in monetary policy was taken as the CBN started publishing the members' statements and voting patterns (except in July 2011) during interest rate meetings. The MPR was increased six times in 2011 and left unchanged only once while other policy instruments were used to complement the MPR. The contrary was, however, the case in 2012 as the MPR was left unchanged throughout the year while members' statements and voting pattern were published. This trend did not change in 2013 as the first three meetings in the year had the MPR left unchanged while the members' statements and voting patterns were provided.

In summary, between October 2004 and May 2013, the CBN has increased interest rate 15 times, cut rates seven times and left the rate unchanged 36 times. The implication of this is that the CBN has kept to its primary mandate of ensuring price stability as against an expansionary mode which would have been more in support of growth.

5. Methodology

5.1 Descriptive technique

Since one of the means of communicating with the public is through publishing of speeches and presentations of the CBN governors, in line with the consensus view in the wider literature that markets react significantly to statements by central bank heads, the study ascertains how the markets in Nigeria have performed in the regimes of the different CBN governors. Specifically, the study finds out markets volatility, measured by the standard deviation, behaved under these regimes.

5.2 Empirical technique

The estimation technique for this study follows the multivariate VAR cointegration approach developed by Johansen (1988; 1991) and further extended by Johansen-Juselius (1990; 1992). The approach is based on the maximum likelihood (ML) estimation method, and has been used widely in the monetary policy literature. In this technique, all the variables in the model are assumed to be endogenous.

² The communiqué number 52 was unavailable for download.

If we consider a VAR with p lags in the form below;

$$y_t = v + A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + \varepsilon_t \quad (1)$$

where y_t is a $K \times 1$ vector of endogenous variables, v is $K \times 1$ vector of parameters, $A_1 - A_p$ are $K \times K$ matrices of parameters, and ε_t is $K \times 1$ vector of disturbance terms. This VAR can be re-specified as a vector error correction (VEC) model as:

$$\Delta y_t = v + \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \quad (2)$$

Where $\Pi = \sum_{j=1}^{j=p} A_j - I_k$, $\Gamma_i = -\sum_{j=i+1}^{j=p} A_j$.

As shown by Engle and Granger (1987), if the variables y_t are first-difference stationary - I(1), the matrix Π in (2) has a rank $0 \leq r < K$, where r is the number of linearly independent cointegrating vectors and K is the number of included variables (potential endogenous variables).

With a reduced rank $0 < r < K$, Π can be expressed as $\alpha\beta$ so that (2) is represented as:

$$\Delta y_t = v + \alpha\beta y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \quad (3)$$

Where α and β are both $K \times r$ matrices of rank r . Two tests, the trace test and the maximum-eigenvalue test are usually used in determining the number of linearly independent co-integrating vectors.

The specification of interest is as follows:

$$NIBOR_t = (MRRMPR_t, ASI, COMM_t) \quad (4)$$

Where NIBOR is the 30-day Nigerian Interbank Offer Rate and the choice of this variable follows the fact that it is an important variable being influenced by monetary policy decisions. MRRMPR is the official interest rate, ASI is the stock market all share index and COMM is communication which is captured using a dummy. Specifically, the period when the CBN was not releasing its policy communiqués is captured as 0 while the period when the communiqués were being released is denoted by 1. The variables NIBOR, MRRMPR and the ASI are taken from various issues of Central Bank of Nigeria statistical bulletin and annual reports.

Theoretically, it is expected that these variables will interact through the transmission mechanism of monetary policy. First, the money market rate, proxied by the NIBOR, is expected to mirror the official interest rate because the central bank in attempting to push through its policy goal sees the banking sector as one of the transmission channels. Therefore, an expansionary policy stance is expected to affect the NIBOR rate positively, thereby increasing liquidity in the system, and vice-versa. Also, the money market and the stock market, proxied by the ASI, react to central bank interest rate decision with varying degree. For example, in an

expansionary mode, the markets are expected to benefit from such liquidity increase. However, based on investors' preferences, the markets may experience varying degree of investments. Also, the way the central bank communicates its policy decisions is very important as both the money and stock market players, if they truly understand what the central bank is doing, may have already factored in the expected policy decision in their transactions, thereby reducing volatility in market rates.

The Augmented Dickey–Fuller (ADF) is used test to ascertain the time series properties of the variables. Following the ADF test is the selection of the appropriate lag length using the Akaike Information Criterion [AIC], the Bayesian Information Criterion [BIC] and the Schwarz information criterion [SIC]. Once the appropriate lag order is determined, the co-integration test is conducted so that the cointegrating vectors are identified.

Following from the above, the focus while estimating equation (4) is to be able to conduct the impulse response function to trace out the interaction of the variables in the model while the variance decomposition technique is applied to explain the extent to which each variable in the model explains the variation in other variables.

5.3 Data source and time frame

The study uses quarterly data from 1985q1 to 2013q2 and sourced primarily from the central bank of Nigeria. To ascertain the volatility in inflation and the money and stock markets, the analysis is conducted for the different regimes of the present and past CBN governors while the overall impact of communications is examined between 1985q1 to 2013q2 using the impulse response and variance decomposition techniques.

6. Results

6.1 Volatilities in inflation and markets under the different CBN governors

Looking at the volatility of inflation under the different CBN governors, Figure 1 in Appendix B depicts that the volatility in inflation was highest between 1985 and 1999 prior to the appointment of Joseph Sanusi as governor, with a standard deviation of 25.52. While the volatility reduced during the era of Joseph Sanusi with the standard deviation dropping to 6.96, this figure is higher when compared with the era of Professor Chukwuma Soludo when the standard deviation dropped to 5.46 and then to the present dispensation of Sanusi Lamido Sanusi with the standard deviation dropping further to 1.7176. The implication of the above is that monetary policy effectiveness as it concerns the curbing of inflation has improved over time. Partly responsible for this may be the improved communication and transparency which has helped improve inflation expectations.

When the volatility of the money market is examined, Figure 2 in Appendix B shows that the period of Sanusi Lamido Sanusi has been the most volatile while it was least during the period of Professor Chukwuma Soludo. This may not be particularly surprising since Professor Soludo during his era was talking more about monetary policy related issues (see Figure 1), implying that the market is able to gauge fairly reasonably monetary policy sentiment. Of all the speeches and presentations given by Mallam Sanusi L. Sanusi, none is classified as monetary policy related (see Table 1 in Appendix A). Another possible reason for the high volatility of the money

market during the period of Sanusi Lamido Sanusi may be the insistent measures taken to clean up the banking system. The coming on board of Sanusi Lamido Sanusi as the CBN governor in 2009 brought about more stringent measures in the banking sector, resulting in reduced margin loans and consequently lower volatility in the stock market as shown in Figure 3 in Appendix B.

6.2 Empirical results

6.2.1 Unit root test, Lag selection and Johansen cointegrating test

The unit root test results in Table 1 of Appendix B show that the MRRMPR and NIBOR are stationary at level while ASI has unit root at level but became stationary after first differencing. Also, the variables were transformed into their natural logarithms. Table 2 of Appendix B shows the lag length selection using the Akaike criterion (AIC), the Schwarz Bayesian criterion (BIC) and the Hannan-Quinn criterion (HQC). These criteria indicate that the appropriate lag length for the model is one although these criteria have distinct penalty factors. To test if there are cointegrating vectors in the equation, the results of the Johansen cointegrating tests are shown in Table 3 of Appendix B using the Eigenvalue and trace tests. The results indicate that there is evidence of three cointegrating vectors in the equation.

6.2.2 The impulse-response analysis

The impulse-response analysis is used to ascertain how each of the variables responds to one standard error shock to another variable. Figure 1 in Appendix C shows that the response of the NIBOR to a one standard error shock to the MRRMPR is positive but declines until it the effect dies out from the 5th quarter. The response of the NIBOR to a shock to communication as shown in Figure 2 in Appendix C indicates that the reaction was initially zero at Q1, but rose consistently before getting flat at Q4 and remained so throughout the entire duration of the period. This flat but positive response from Q4 is an indication of the importance of communication. This result supports the findings of Guthrie and Wright (2000) that the Reserve Bank of New Zealand used its communication in an organized and highly effectual way for controlling short-term rates.

The response of the stock market all share index (ASI) to a shock to the MRRMPR is shown in Figure 3 in Appendix C. Specifically, the response of the ASI to a one standard error shock to the official interest rate is negative from Q1 and the negative rise continued before becoming flat and remaining negative from Q6. With respect to the response of the ASI to a one standard error shock to communication, Figure 4 in Appendix C shows that the response was negative from Q1 and remained so until the negative effect became constant from Q7.

6.2.3 The variance decomposition analysis

Another set of results to discuss are the findings of the variance decomposition analysis. Table 1 in Appendix C shows that approximately 87% of the variation in the official interest rate is explained by its own shock, followed by the stock market ASI and then by communication. NIBOR explains the least variance in the official interest rate. From Table 2 in Appendix C, approximately 75% of the variance in the NIBOR is explained by its own shock, followed by the official interest rate and then by communication. The stock market ASI explains the least

variance in the NIBOR. The fact that the official interest rate is able to explain the second largest variation in the NIBOR implies that over the period studied, monetary policy may have been relatively successful through the interest rate channel of the transmission mechanism. This finding is in line with the results of Siklos and Bohl (2003) who found that communication was able to explain a significant variation in the financial markets in Germany.

With respect to the variation in the stock market ASI, Table 3 in Appendix C shows that while communication explains the least variation in the ASI, the greater variance of 96% is explained by own shock, followed by the official interest rate and then the NIBOR. This result, however, does not support the finding of Salisu (2012) that communication had significant impact on stock prices and reduced volatility in the stock market. Table 4 in Appendix C shows that the bulk of the variance in the central bank communication is explained by its own shock (i.e about 99%) followed by the official interest rate (1.1%) while NIBOR and ASI explained less than 1%.

7. Summary of findings and policy implications

The study attempted to examine the impact of communication on monetary policy in Nigeria applying the standard deviation measure of volatility and the vector autoregressive approach. The main findings include (1) inflation and markets volatility reduced significantly in the period of improved CBN communication in line with global best practices. However, money market volatility was highest in the period of Mallam Sanusi and one reason may be due to the zero tolerance for unethical practices in the financial system (2) money market responded positively to central bank communication until the effect became permanent after Q4 (3) the stock market responded negatively to central bank communication until the negative effect became permanent from Q7 (4) the greater variance in official interest rate is explained by its own shock, followed by the stock market and then communication while money market explained the least variance in the official interest rate (5) the greater variance in the NIBOR is explained by own shock, followed by official interest rate and then communication while the stock market explained the least variance in the money market (6) central bank communication explained the least variance in the stock market while the greater variance in the market is explained by own shock, followed by the official interest rate and then the money market (7) the greater variance in the central bank communication is explained by its own shock followed by the official interest rate while the money and stock markets explained less than 1% of the variance in the central bank communication.

These findings have a number of policy implications. First, the CBN must continue to improve on its communication strategy as this has helped reduce inflation and markets volatility, which is good for macroeconomic stability. One way that this can be done is for the CBN to more effectively align its strategy with those of the FED, BOE and ECB with respect to publishing the speeches and presentations of other members of the monetary policy committee. This will make the members more visible to the public and will provide the much-needed platform for the public to better understand their policy preferences. Second, the CBN governors in their speeches and presentations should be talking more about monetary issues as this will help improve perception, transparency and credibility of monetary policy. Third, the fact that the response of the money market to central bank communication is positive and becomes flat from Q4 implies that this market reverts back to equilibrium faster than the stock market where the negative impact becomes flat after Q7. This, therefore, suggests that the CBN should focus its monetary policy

transmission mechanism more through the interest rate channel than the asset channel. Future research on the subject could benefit from more rigorous analysis. For instance, monetary policy communications can be related to various parameters and index of communication developed. This index might better capture the impact of communication rather than the basic dichotomous measure adopted in this study.

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- Yanamandra, S. (2012) ‘Communication strategy, Central banking and Credibility bonus – A study dealing with “Impossible Trinity” in the Indian context’ *Paper presented at the “International Conference on Economics and Finance*

Appendix A

Table 1: Speeches/Presentations by Sanusi L. Sanusi btw June 2009 – May 31st 2013

Monetary Policy Related Speeches	Economic Related Speeches	Others
	The Central Bank of Nigeria & Development	Islam and The Culture of Education
	Nigeria's Economic Development Aspirations and the Leadership Question	
	Proposed Currency Restructuring Exercise, 'PROJECT CURE'	
	The Role of Development Finance Institutions in Infrastructure Development	
	Increasing Women's Access To Finance: Challenges and Opportunities	
	Beyond Political Rhetoric: Investing In Youth As An Economic Strategy	
	Neither the Washington nor Beijing Consensus: Development Models to fit African Realities and Cultures	
	Banking Reform and Its Impact on the Nigerian Economy	
	Banks in Nigeria and National Economic Development: A Critical Review	
	Global Financial Meltdown and The Reforms In Nigerian Banking Sector	
	Growth Prospects for The Nigerian Economy	
	Keynote Address on the 4 th Annual Banking and Finance Conference	
	Consolidating The Gains Of The Banking Sector Reforms	
	The Nigerian Banking Industry: what went wrong and the way forward	
	Assessment of Current Development in the Nigerian Economy and the CBN Policy Action	

Table 2: Speeches/Presentations by Prof. Soludo (CBN Gov. May 31st 2004 – May 2009)

Monetary Policy Related Speeches	Economic Related Speeches	Others
	The Journey so Far and the Road Ahead	Creating Effective Governance and Leadership for Sustained National Prosperity
	Banking in Nigeria at a Time of Global Financial Crisis	
	Developments in the Banking Sector	
The Challenges of Ensuring Appropriate Inflation Rate, Exchange Rate, Exchange Rate and Interest Rate Regimes in Nigeria		
	Global Financial & Economic Crisis: How Vulnerable is Nigeria?	
Exchange Rate Dynamics		
	Global Financial Meltdown	
	Global Financial Meltdown	
	Creating an Inclusive Economy for the Nigerian Woman	
	Response to Recent Developments in the Banking Industry	
Issues on the level of Interest Rates in Nigeria		
	Financing Imo State towards Greatness	
	The Unfinished Revolution in the Banking System	
	Making Finance Working for the Poor	
	Banks and the National Economy: Progress, Challenges and the Road Ahead	
	Financial System Strategy 2020 (FSS2020) as the Post Consolidation Response	
	Towards Vision 2020	
Strategic Agenda for the Naira		
	The Safety and Soundness of the	

	Banking System	
	From a Pariah, Failed State to an Emerging Market Economy: The Obasanjo Legacy and the Challenges Ahead	
	Financial System Strategy 2020	
	Preserving Stability and Accelerating Growth	
	Nigerian Economy: Can We Achieve the Vision 20:2020?	
Macroeconomic, Monetary and Financial Sector Developments		
	Financial System Strategy 2020: The Next Development Frontier	
	Financial Sector Reforms and the Real Economy	
	Law, Institutions and Nigeria's Quest to Join the First World Economy"	
Macroeconomy: Progress Report on Monetary and Exchange Rate Policy and the Financial System		
	"Anambra 2030: Envisioning the African Dubai and Silicon Valley'	
	Update on CBN and Reforms	
	Conclusion of the Acquisition of Assets and Assumption of Liabilities of Allstates Trust Bank, Plc (in-liquidation)	
State of the Macroeconomy: Outlook for Monetary, Banking and Exchange Rate Regimes		
	Beyond Banking Sector consolidation in Nigeria	
Programme for Further Liberalization of the Foreign Exchange Market in Nigeria		
	The Next Stage of Reform: Institutionalizing Change in Nigeria	
	Nigeria: Economic Growth Drivers	

	and Financing Challenges	
	The Outcome of the Banking Sector Recapitalization and the Way Forward for the Undercapitalized Banks	
Towards a New Monetary Authority and Financial System: Interim Progress Report		
Towards a Stronger Monetary Authority and Financial System		
	State and Local Governments to Devote 1% of Annual Budget for Micro Credit.	
	CBN Draws Up Contingency Plan For Weak Banks	
	"Capital Flows and Economic Transformation in Nigeria"	
"Developing the Bond Market in Nigeria: Challenges & Prospects"		
	Promoting Effective and Efficient Customer Service Delivery: The Role of CBN Branches	
	Creating a Continent Wide Correspondent Banking Network in Africa.	
	Consolidating the Nigerian Banking Industry to Meet the Development Challenges of the 21st Century.	

Table 3: Speeches/ Presentations by Joseph Sanusi (CBN Gov. May 1999 – May 30th 2004)

Monetary Policy Related Speeches	Economic Related Speeches	Others
		Valedictory Speech
		Key Note Address
	Welcome Address	
		CBN Governor's Address
	Enhancing Efficiency of the Payments System in Nigeria	
		The Dawn of a New Era in CBN
		CBN Governor's Address
		CBN Governor's Address
	Revamping Small and Medium Industries	
Exchange Rate Mechanism: The Current Nigerian Experience		
		Cash Handling, Automation and Management
		Keynote Address
		Enhancing Transparency of Financial Services Industry
Monetary and Financial Policy Management		
		Financial Sector Stability: Issues and Challenges
		Silver Jubilee Anniversary
	The Small and Medium Industries Equity Investment Scheme and Financial Deepening in Nigeria	
		Nigeria at 43
		Multi Disciplinary Cost Management Practice: Towards a National Economic Resurgence
Third CBN Annual Monetary Policy Conference		

		Banking and Allied Matters for Judges
	Re-inventing Business in Africa: From Entrepreneurship to Corporation	
	Ensuring Banking Soundness and Financial Sector Stability	
		Welcome Address
	Welcome Address on Development of the Nigerian Financial Markets	
Keynote Address		
	Keynote Address	
	Utilization of the SMIEIS Funds: The Right Approach	
	Developing the Non-oil Sector in Nigeria	
	Central Bank and the Globalizing Forces of the 21 st Century	
	Progress of Small and Medium Industries Equity Investment Scheme: The Central Bank of Nigeria's Perspective	
		Keynote Address on Regional Course on Financial Programming and Policies
On-going Efforts Towards a Monetary Union in the West African Sub-Region		
	Opportunities in Financial Services Sector in Nigeria	
		The Role of the Financial Sector Surveillance Committee of the CBN in Anti-Money Laundering, Fraud and Other Misuse
		Keynote Address at the 19 th Annual Directors Seminar
		Special Remarks at the National Summit on SMIEIS
	Overview of Governments Efforts in the Development of SME's and the	

	Emergence of Small and Medium Industries Equity Investment Scheme	
		Keynote Address at the Annual Retreat of Association of Corporate Managers
		Central Bank of Nigeria's Standpoint on Anti-Money Laundering Compliance
Management of Nigeria's Debt		
	Fiscal Policy Management in Nigeria	
	Opening Address at the Annual Conference of Money, Macroeconomic Finance and Research Group	
	Central Bank Authority, Economic Stability and the Rule of Law	
		Welcome Address at the First Stakeholders Annual Dinner of Association of Corporate Affairs Managers
		Welcome Address at the Public Launching of the Book titled 'Nigerian Securities and Exchange Commission'
		Keynote Address at the Commissioning of Internet Connectivity Project
	Overview of Recent Economic Developments and Investment Potentials in Nigeria	
	Recent Macroeconomic Developments and the Way Forward	
		Opening Ceremony of Bond Bank Limited
Monetary, Credit, Foreign Trade and Exchange Policy Guidelines for 2002/2003: Challenges and Prospects		
	Mortgage Financing in Nigeria: Issues and Challenges	

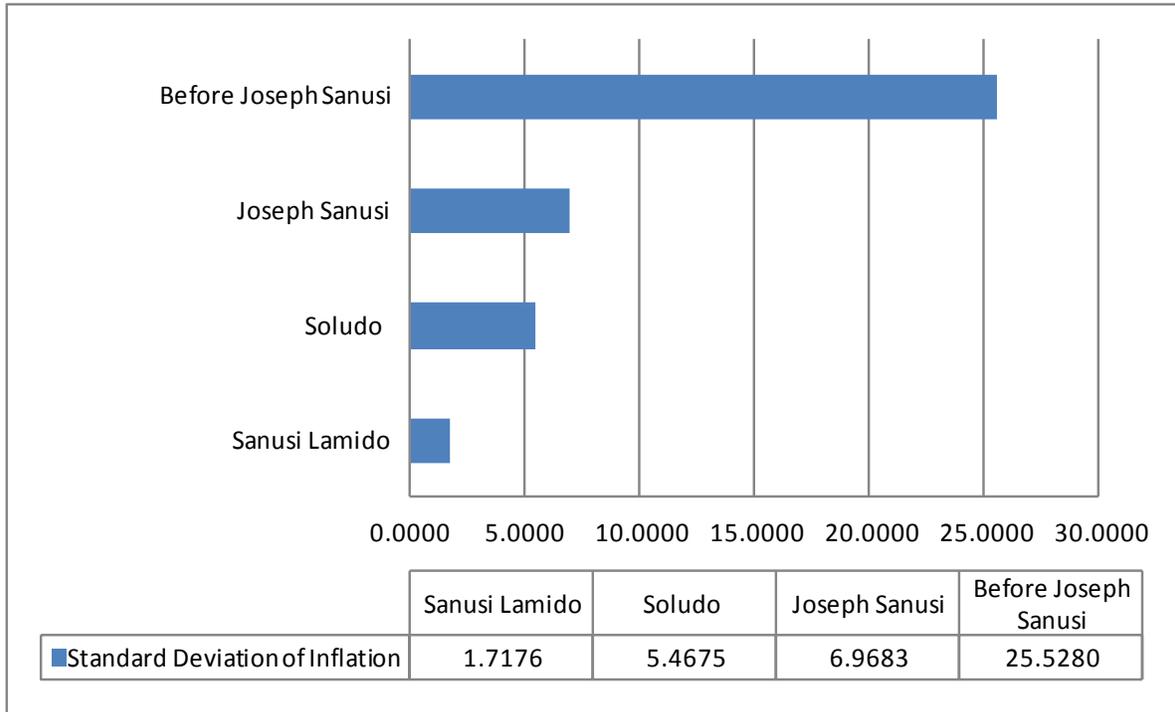
		Sustainable Rice Production in Nigeria
	Macroeconomic Developments in 2002 and Assessment of SMIEIS	
	Capacity for Economic Management in Nigeria: The Role of Tertiary Institutions	
Keynote Address at 2 nd CBN Annual Monetary Policy Conference		
		Keynote Address at 4 th CBN Seminar for Finance Correspondents and Business Editors
		Keynote Address at the Chartered Institute of Bankers' Dinner
		Keynote Note Speech at Endowment Fund Lunching
		National Seminar on Banking and Allied Matters for Judges
		Keynote Address at 14 th Annual Banking Conference
	Achieving Fiscal Sustainability in Nigeria	
Monetary Policy Forum and Implementation: Nigerian Experience		
The State of the Nigerian Economy with particular reference to Exchange Rate and Reserve Management		
		The New Capital Accord
Central Bank and the Macroeconomic Environment in Nigeria		
		Opening Remarks at the First Annual Capital Market Conference
		Opening Remarks at the Nigerian Capital Market and Globalization Challenge
	Savings Management in Developing Countries	

Nigeria's Macroeconomic Position: Controlling Money Supply		
Current Challenges of Monetary Policy in Nigeria		
	Macroeconomic Developments in the First Five Months of 2002	
	Repositioning the Nigerian Financial Markets for Competitiveness in the 21 st Century	
	Poverty Reduction Strategy Paper: A CBN Perspective	
	The Importance of Financial Intermediation In Sustaining Economic Growth and Development: The Banking Sector Review	
		Promoting Good Corporate Governance: Issues and Challenges
International Monetary and Financial Affairs and Development		
Welcome Address at the 5 th Monetary Policy Forum		
	Welcome Address at the FGN 2002 Budget Seminar	
		Welcome Address at the Bankers' Committee Forum
		Governor's First Briefing

Source: Compiled from CBN Website

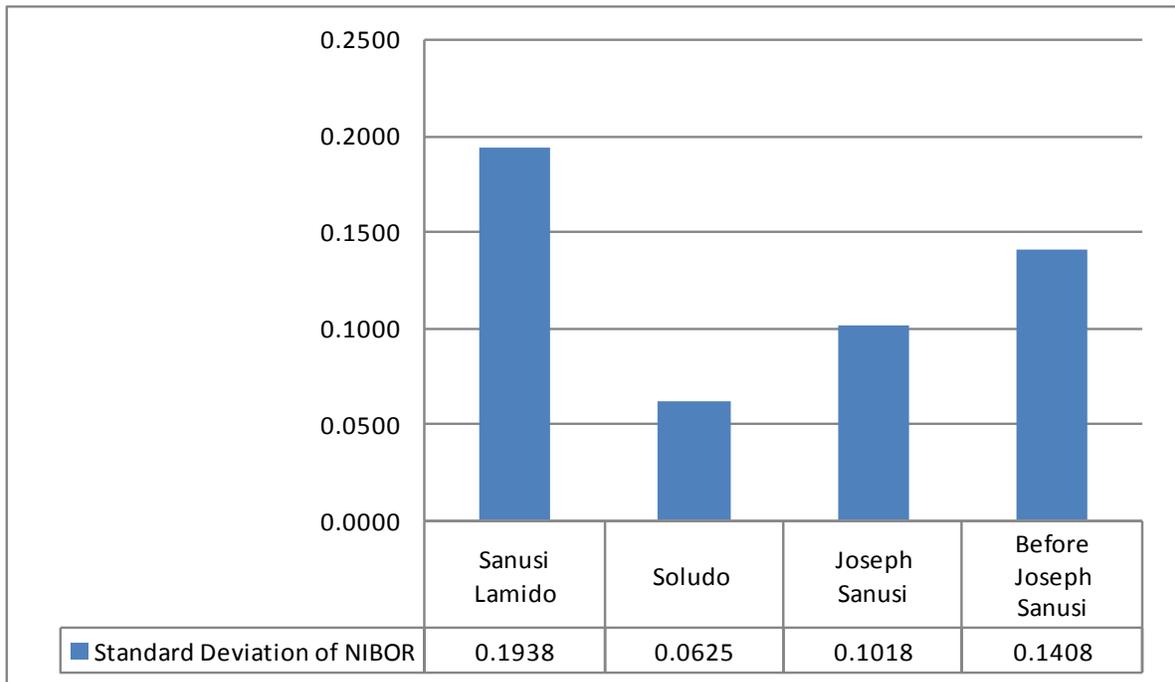
Appendix B

Figure 1: Inflation volatility under the CBN Governors



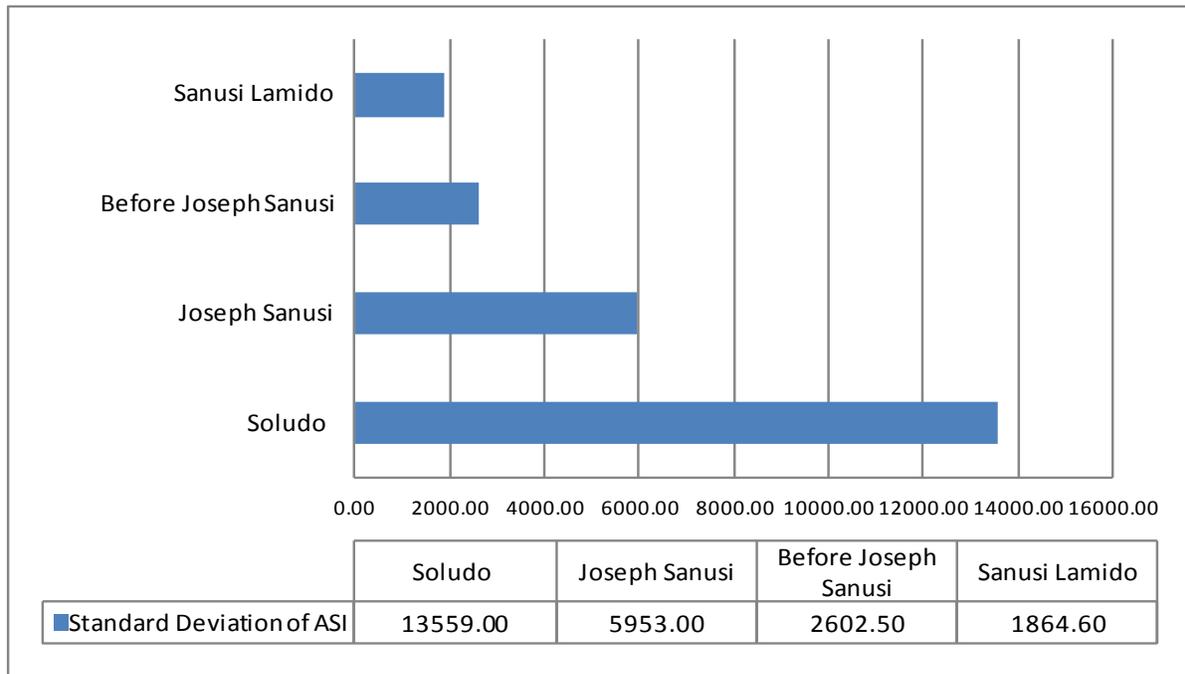
Source: Authors

Figure 2: Volatility of the NIBOR Rate under the CBN Governors



Source: Authors

Figure 3: Volatility of the All Share Index under the CBN Governors



Source: Authors

Table 1: Unit root test

	ADF Test at level		ADF Test at first diff	
	ADF test statistic	p-value	ADF test statistic	p-value
MRRMPR	-2.792045	0.0626	-8.542120	0.0000
NIBOR	-3.204802	0.0223	-7.326684	0.0000
ASI	-1.937105	0.3144	-5.706147	0.0000

Table 2: VAR system, maximum lag order 2

lags	Loglik	P(LR)	AIC	BIC	HQC
1	392.8672		-6.7794*	-6.2884*	-6.5802*
2	405.2792	0.0729	-6.7141	-5.8303	-6.3556

Table 3: Johansen Co-integration Test

Rank	Eigenvalue	Trace test	p-value	Lmax test	p-value
0	0.3995	135.7300	0.0000	56.6150	0.0000
1	0.3232	79.1110	0.0000	43.3300	0.0000
2	0.2750	35.7810	0.0000	35.7000	0.0000
3	0.0007	0.0812	0.7757	0.0811	0.7757

Appendix C

Figure 1: Response of NIBOR to shock to MRRMPR

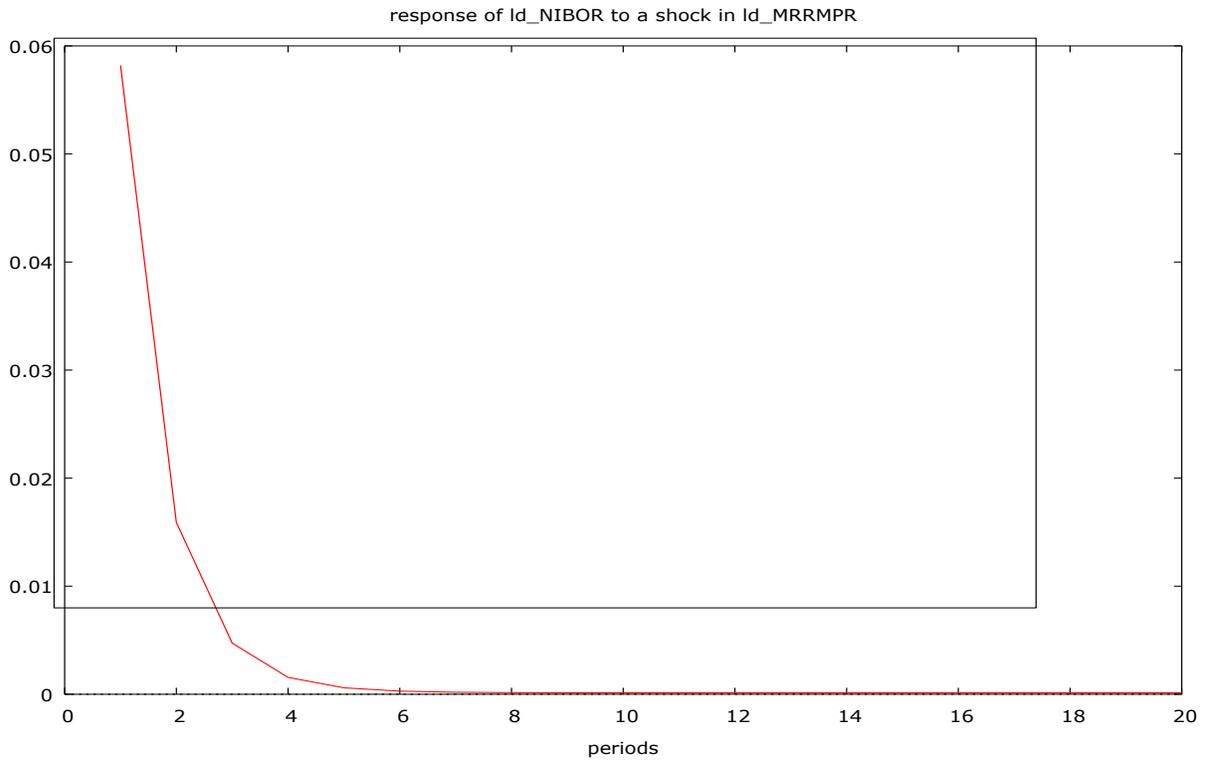


Figure 2: Response of NIBOR to shock to Communications

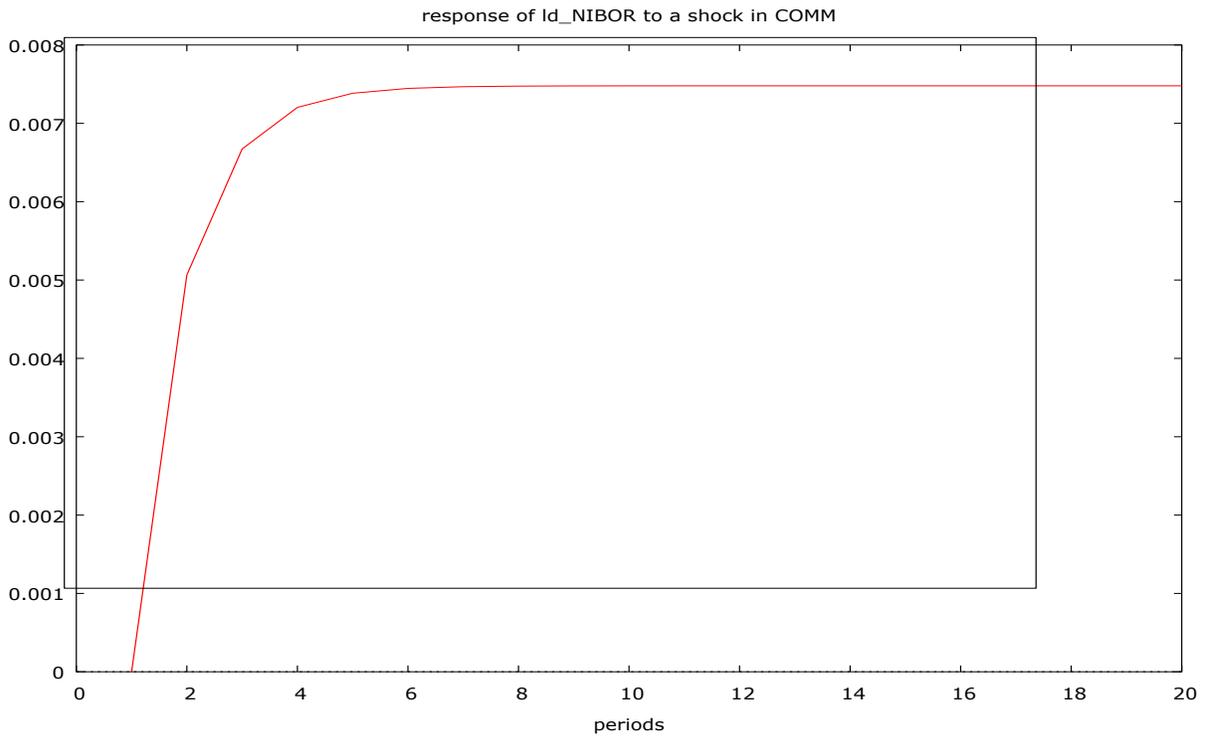


Figure 3: Response of ASI to shock to MRRMPR

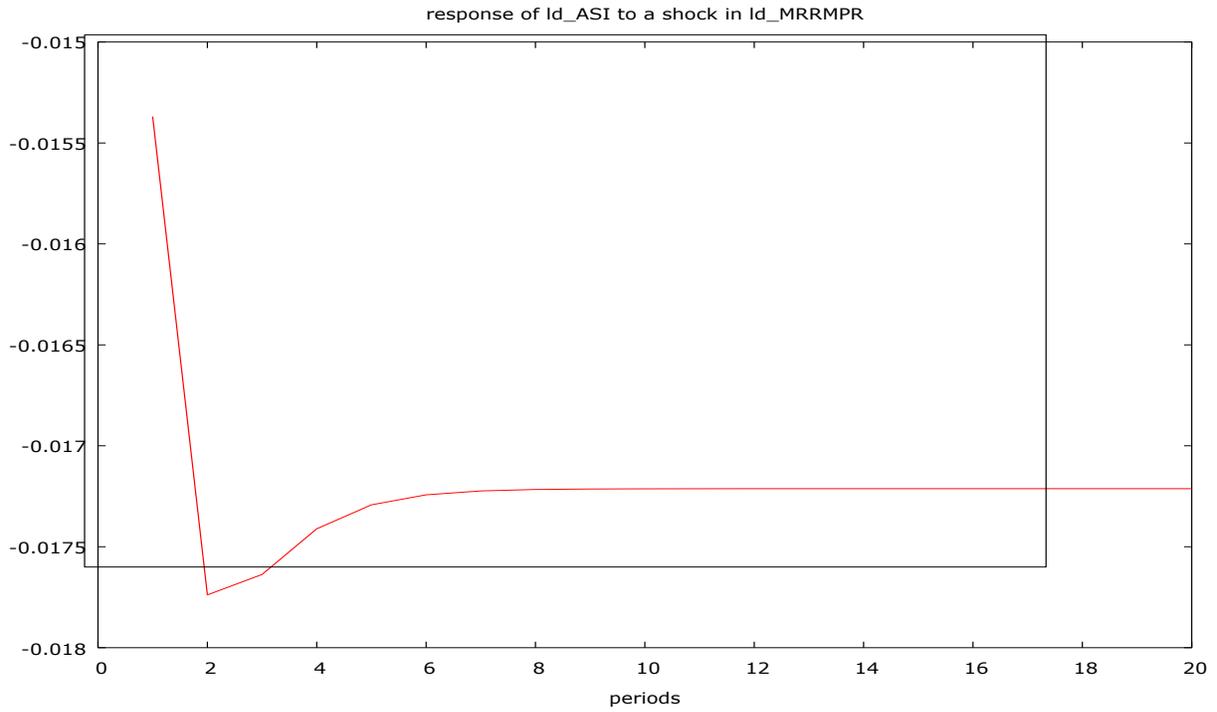


Figure 4: Response of ASI to shock to Communication

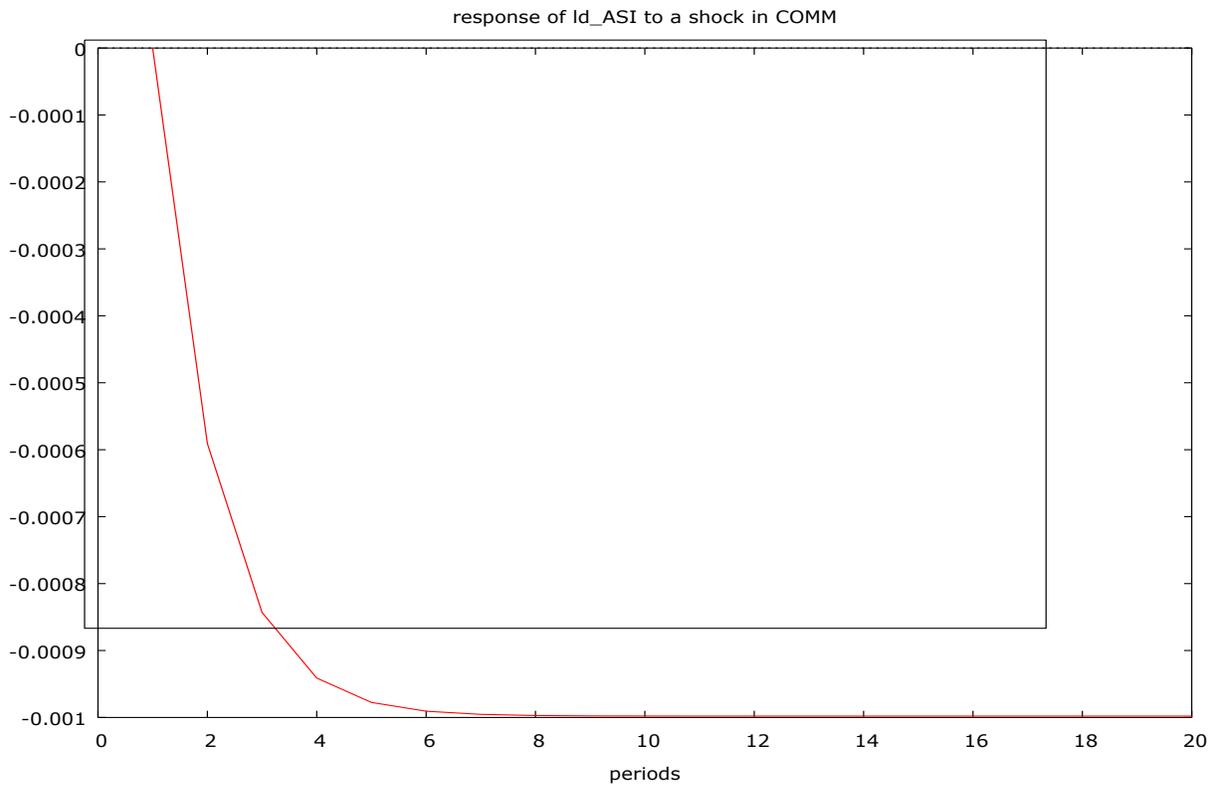


Table 1: Decomposition of variance for MRRMPR

Period	MRRMPR	NIBOR	ASI	COMM
1	100.0000	0.0000	0.0000	0.0000
2	98.6631	0.1806	0.9577	0.1986
3	97.0833	0.1963	2.2243	0.4960
4	95.4897	0.1949	3.5004	0.8150
5	93.9249	0.2079	4.7349	1.1323
6	92.4037	0.2295	5.9252	1.4416
7	90.9299	0.2544	7.0743	1.7415
8	89.5031	0.2799	8.1852	2.0318
9	88.1219	0.3051	9.2600	2.3129
10	86.7843	0.3297	10.3008	2.5852
11	85.4884	0.3536	11.3091	2.8489
12	84.2321	0.3768	12.2864	3.1046
13	83.0139	0.3993	13.2343	3.3525
14	81.8319	0.4212	14.1539	3.5931
15	80.6846	0.4423	15.0465	3.8266
16	79.5704	0.4629	15.9133	4.0534
17	78.4880	0.4829	16.7554	4.2737
18	77.4360	0.5024	17.5739	4.4878
19	76.4131	0.5213	18.3697	4.6960
20	75.4182	0.5396	19.1437	4.8985
Average	86.7740	0.3340	10.2975	2.5945

Source: Authors estimations

Table 2: Decomposition of variance for NIBOR

Period	MRRMPR	NIBOR	ASI	COMM
1	22.8831	77.1169	0.0000	0.0000
2	21.7857	78.0325	0.0282	0.1535
3	21.5182	77.9660	0.1034	0.4123
4	21.3954	77.6849	0.2069	0.7128
5	21.2948	77.3569	0.3222	1.0262
6	21.1980	77.0185	0.4414	1.3422
7	21.1025	76.6790	0.5613	1.6572
8	21.0080	76.3412	0.6808	1.9701
9	20.9143	76.0059	0.7994	2.2804
10	20.8214	75.6734	0.9171	2.5880
11	20.7294	75.3439	1.0338	2.8930
12	20.6382	75.0172	1.1494	3.1952
13	20.5478	74.6933	1.2641	3.4948
14	20.4581	74.3723	1.3777	3.7918
15	20.3693	74.0541	1.4904	4.0863
16	20.2812	73.7386	1.6020	4.3781
17	20.1939	73.4259	1.7128	4.6675
18	20.1073	73.1158	1.8225	4.9543
19	20.0215	72.8084	1.9313	5.2387
20	19.9364	72.5036	2.0392	5.5207
Average	20.8602	75.4474	0.9741	2.7181

Source: Authors estimations

Table 3: Decomposition of variance for ASI

Period	MRRMPR	NIBOR	ASI	COMM
1	1.8651	1.2363	96.8986	0.0000
2	2.2263	0.8817	96.8907	0.0014
3	2.3416	1.1736	96.4819	0.0029
4	2.3830	1.4700	96.1430	0.0040
5	2.4010	1.6939	95.9003	0.0048
6	2.4105	1.8573	95.7269	0.0053
7	2.4166	1.9784	95.5993	0.0057
8	2.4209	2.0706	95.5025	0.0060
9	2.4241	2.1428	95.4268	0.0063
10	2.4267	2.2008	95.3661	0.0065
11	2.4288	2.2483	95.3163	0.0066
12	2.4305	2.2879	95.2748	0.0068
13	2.4320	2.3214	95.2397	0.0069
14	2.4333	2.3502	95.2095	0.0070
15	2.4344	2.3752	95.1834	0.0071
16	2.4354	2.3970	95.1605	0.0071
17	2.4362	2.4163	95.1403	0.0072
18	2.4370	2.4334	95.1223	0.0073
19	2.4376	2.4488	95.1063	0.0073
20	2.4383	2.4626	95.0918	0.0074
Average	2.3829	2.0223	95.5890	0.0056

Source: Authors estimations

Table 4: Decomposition of variance for COMM

Period	MRRMPR	NIBOR	ASI	COMM
1	0.6155	0.0279	0.0811	99.2755
2	0.8412	0.0399	0.0883	99.0306
3	0.9556	0.0496	0.0914	98.9034
4	1.0200	0.0565	0.0929	98.8306
5	1.0600	0.0613	0.0938	98.7849
6	1.0871	0.0647	0.0943	98.7539
7	1.1064	0.0672	0.0947	98.7316
8	1.1210	0.0691	0.0950	98.7149
9	1.1323	0.0706	0.0953	98.7018
10	1.1414	0.0718	0.0954	98.6914
11	1.1488	0.0728	0.0956	98.6829
12	1.1550	0.0736	0.0957	98.6757
13	1.1602	0.0743	0.0958	98.6697
14	1.1647	0.0748	0.0959	98.6646
15	1.1686	0.0754	0.0960	98.6601
16	1.1720	0.0758	0.0961	98.6562
17	1.1750	0.0762	0.0961	98.6527
18	1.1776	0.0765	0.0962	98.6497
19	1.1800	0.0769	0.0962	98.6469
20	1.1822	0.0771	0.0963	98.6444
Average	1.0882	0.0666	0.0941	98.7511

Source: Authors estimations