

**Nigeria: Publication of Financial Sector Assessment Program Documentation—  
Technical Note on Strengthening Monetary and Liquidity Management**

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FINANCIAL SECTOR ASSESSMENT PROGRAM UPDATE

# NIGERIA

STRENGTHENING MONETARY AND LIQUIDITY MANAGEMENT

## TECHNICAL NOTE

JULY 2013

INTERNATIONAL MONETARY FUND  
MONETARY AND CAPITAL MARKETS DEPARTMENT

THE WORLD BANK  
FINANCIAL SECTOR VICE PRESIDENCY  
AFRICA REGION VICE PRESIDENCY

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**GLOSSARY**

AMCON	Assets Management Corporation of Nigeria
BDCs	Bureau de Change
CBN	Central Bank of Nigeria
CRR	Cash Reserve Requirement
ECA	Excess Crude Account
FGN	Federal Government of Nigeria
FAAC	Federation Account Allocation Committee
FMDA	Financial Markets Dealers Association
FSAP	Financial Sector Assessment Program
FLAC	Fiscal Liquidity Assessment Committee
LAG	Liquidity Assessment Group
MPC	Monetary Policy Committee
MPR	Monetary Policy Rate
MDAs	Ministries, Departments and Agencies of FGN
₦	Naira
NNPC	Nigerian National Petroleum Corporation
NTBs	Nigerian Treasury Bills
OBB	Open buy back
OMO	Open Market Operations
SDF	Standing Deposit Facility
STA	Single Treasury Account
WDAS	Wholesale Dutch Auction System
US\$	U.S. Dollar

## I. CONTEXT AND BACKGROUND<sup>1</sup>

1. **The 2002 Financial Sector Assessment Program (FSAP) identified considerable problems in containing the upsurge in liquidity in the financial system, partly caused by spending of oil receipts.** The continuous injection of the liquidity in the system (from spending of oil receipts) required constant monitoring and effective sterilization on the part of the Central Bank of Nigeria (CBN). In the face of persistent excess liquidity in the financial system, the CBN made numerous adjustments in the monetary policy framework and instruments; however, these had a limited impact on monetary aggregates. This ineffectiveness was exacerbated by heavy reliance on rigidly defined direct monetary controls, de facto residual financing of the government debt and the lack of responsiveness of the prime lending rate to changes in liquidity conditions and inflation. However, over the past decade, the CBN have introduced numerous reforms to strengthen the conduct of monetary policy and manage liquidity.

2. **For most part of the last decade, monetary policy in Nigeria has been based on the monetary targeting.** Broad money had been used as the policy target and reserve money as the operating target. However, the CBN is gradually transitioning towards inflation targeting regime and has increasingly used its monetary policy rate (MPR) to guide market interest rates. The pace of this transition is rightly measured because of weak transmission from the MPR to lending rates. The conduct of monetary policy and liquidity management has been further complicated by a variety of reasons. For the most part of the last decade, the spending of oil receipts made monetary policy implementation very difficult. This problem was addressed to some extent when the government established the budget oil price rule and the Excess Crude Account (ECA) to help sterilize a portion of oil receipts in periods of high oil prices. However, substantial but unpredictable spending at state and local government levels and, at time, considerable extra-budgetary federal spending financed by ad hoc distributions from the Excess Crude Account (ECA) have made this fiscal rule less potent for supporting monetary policy. If implemented fully, this fiscal rule and the ECA can facilitate monetary policy in achieving inflation objective. Another complication is large shocks in the Nigerian economy, partly because of heavy reliance on oil receipts. For example, the Nigerian stock market lost about two-thirds of its value in 2008, which was followed by a sharp decline in world oil prices later that year.

3. **A structural excess liquidity is a common feature in oil exporting countries like Nigeria because of sustained large foreign currency inflows.** In particular, if the exchange rate is pegged or nearly pegged, the central bank has to purchase foreign exchange, which leads to structural domestic liquidity excess if the central bank is then not able to mop up the excess. This note reviews the current frameworks for monetary policy and liquidity management and discusses role of selective financial markets in improving liquidity

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<sup>1</sup> This note was prepared by Mumtaz Hussain (IMF).

management in Nigeria. It also provides some recommendations to further strengthen the implementation of monetary policy, particularly systemic liquidity management.

## II. MONETARY POLICY FRAMEWORK

### A. Monetary Policy Objectives

4. **A multiplicity of objectives for the CBN are set out in the new Bank of Nigeria Act re-enacted in May 2007.** The Bank of Nigeria Act states: “The principal objects of the Bank shall be to: (a) ensure monetary and price stability; (b) issue legal tender in Nigeria; (c) maintain external reserves to safeguard the international value of the legal tender currency; (d) promote a sound financial system in Nigeria; and (e) act as banker and provide economic and financial advice to the Federal Government.” While congruent with the activities of the CBN, the act does not assign primacy to any one objective, enabling the CBN to pursue seemingly inconsistent objectives at times.

5. **At times, the markets appear confuse about policy signal as they perceive that the CBN is pursuing multiple objectives.** This confusion was particularly obvious after the 2009 banking crisis. Attempt to not raise interest rates at a time when a number of banks’ solvency was seriously compromised, while considered appropriate, was in conflict with significant sustained pressures on the currency and prices. These pressures were partly caused by the expansionary fiscal policy. To maintain stability of the exchange rate in this period, particularly after the large depreciation in late 2008, required excessive use of foreign exchange sales, which led to a sharp decline in international reserves by end-2010, while inflation remained at double digits, partly because of highly accommodative monetary policy.

### B. Institutional Arrangements for Monetary Policy

6. **The CBN has robust institutional framework in place to design and implement monetary policy.** The Monetary Policy Committee (MPC) is the highest policy making committee of CBN with the mandate of determining appropriate stance of the policy in the short to medium term based on economic and financial conditions in the economy. The MPC is chaired by the Governor of the CBN and includes as members all four deputy governors, two representatives of the CBN Board, three members appointed by the President of Nigeria and two members appointed by the Governor. Most of external members come from academic, professional and business circles. The Committee meets bi-monthly for monetary policy decisions through majority voting and communicates its decisions to the public through publishing communiqués, which normally also include individual members’ statements.<sup>2</sup> A monetary policy technical committee, chaired by the deputy governor for

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<sup>2</sup> In its March 19, 2013, meeting, the Committee decided by a majority vote of nine to three to maintain the current monetary policy stance (MPC Communiqué No 88).

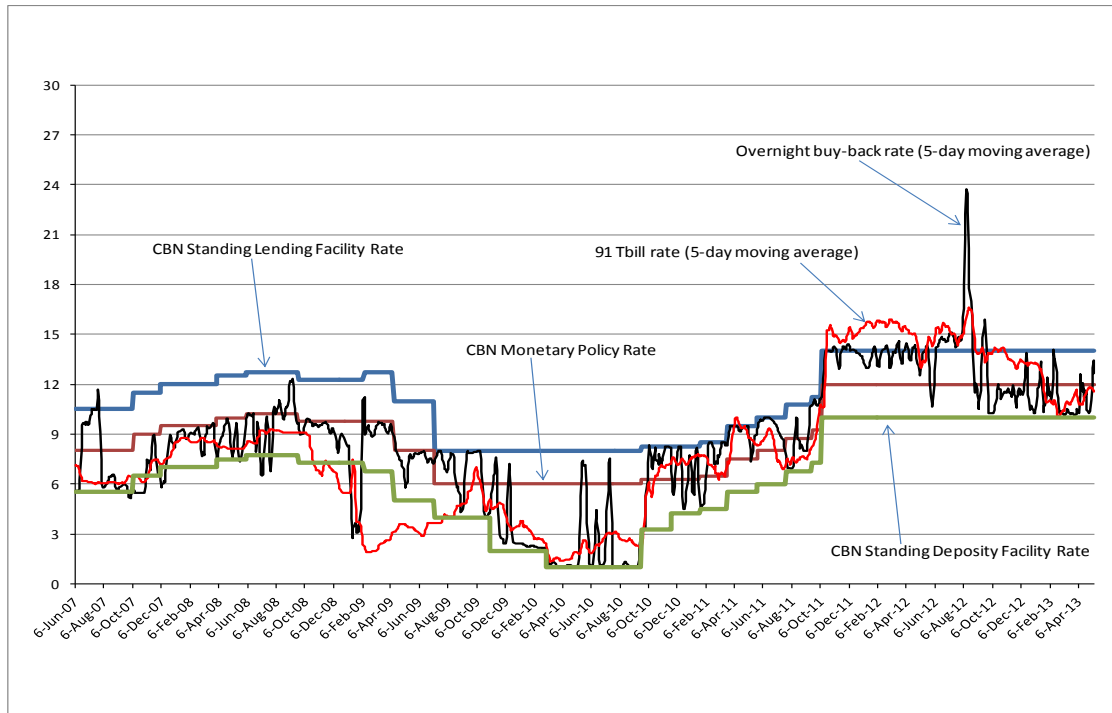
economic policy, provides technical support to the MPC by preparing an assessment of economic and financial developments and other documents on issues of interest.

7. **The Monetary Policy Implementation Committee (MPIC) serves as the implementation arm of the MPC.** The MPIC meets on weekly basis and chaired by the deputy governor of economic policy. It reviews liquidity forecast and provides guidance on specific instruments to be used to achieve monetary targets. The day-to-day management of liquidity in the banking system is undertaken by the liquidity assessment group (LAG) housed in Financial Markets Department of the CBN. Using an elaborate liquidity forecast template, the LAG suggests policy measures to be taken on each day to hit the reserve money target. The group is assisted by the fiscal liquidity assessment committee (FLAC) that is comprised of representatives from the CBN and the ministries, departments and agencies (MDAs) of the Federal Government of Nigeria (FGN) involved in fiscal operations. Information on the Treasury operations provided by the FLAC help improve the liquidity forecast.

### **C. Monetary Operational Framework**

8. **In December 2006, the CBN introduced a new framework for its monetary operations.** This was based on having an operational target for the overnight interbank rate, specifically the open buy back (OBB) rate. This target was to be achieved by an interest rate corridor set-up and using open market operations in combination with standing facilities. Since then, the CBN has continued to refine the use of the monetary policy rate (MPR) and the interest rate corridor, which did stabilize interest rates in the interbank market (Figure 1). While the CBN generally sets the OBB rate target in the middle of the MPR corridor, there have been prolonged periods of liquidity excesses or shortages that led the market rate to gravitate towards either the floor (as in most of 2010) or the ceiling of the corridor (as in early 2012).

**Figure 1. Nigeria: Monetary Policy Rate, Interest Rate Corridor, and Short-Term Interest Rates**



Source: CBN.

9. **However, frequent changes to the operating procedures of monetary policy have tended to undermine the credibility of the framework.** Over the past two years, the MPR corridor has varied between 400 bps and 700bps. At times, the CBN appears to be guiding short-term interest rates towards the MPR, while at other times these rates are pushed towards the upper range of the corridor. Moreover, the frequent and abrupt use of the Cash Reserve Requirement (CRR), which was gradually raised from 1 percent in 2010 to 12 percent in 2012, drives an increasing wedge between banks' costs and their receipts, makes it harder for them to manage their liquidity effectively. Finally, abrupt changes in regulations also affected the credibility. For example, in August 2012, the OBB rate spiked when the CBN prohibited the banks from participating in the wholesale foreign exchange sales throughout the term of their repurchase or standing lending transactions with the CBN.

### III. LIQUIDITY FORECASTING AND MANAGEMENT

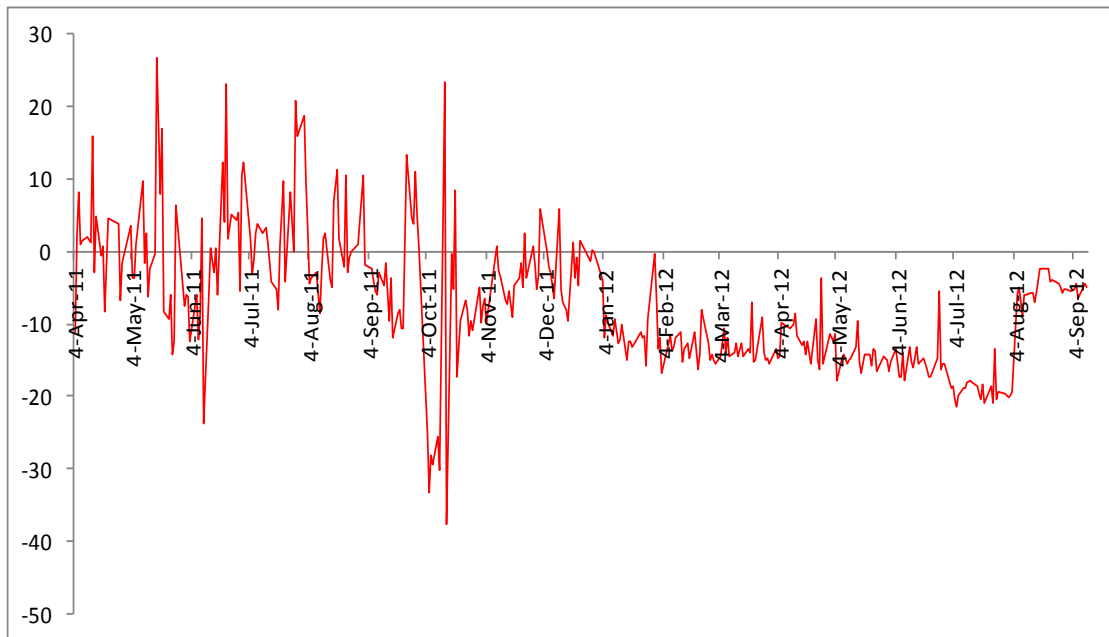
#### A. Liquidity Forecasting and Analysis

10. **The CBN has put considerable efforts to develop a template for forecasting liquidity.** It has in place a detailed cash flow analytical framework to assess structural liquidity created mainly by spending of oil receipts. For day-to-day purposes, the Financial Market Department used a detailed liquidity forecasting template that serves as the basis for



conducting open market operations. The template produces one-week ahead forecast and tracks forecast errors. Forecast errors can be categorized into various source components, such as FGN government operations, oil sector transactions (from Federation Account Allocation Committee (FAAC) and NNPC), currency in circulation and activities on the overnight facilities (Appendix 1). Continued efforts to improve the forecast are paying off as the forecast errors are declining gradually (Figure 2). However, a number of improvements could be made to further strengthen the liquidity forecasting. For example, while FGN operations are broken down between revenue and expenditures, there is no breakdown by MDAs. Moreover, fiscal operations of states and local governments, account for about half of public spending, are not fully reflected in the forecasting template. Therefore, efforts to improve the liquidity forecasting should focus on better coverage of fiscal operations and on extending the forecasting horizon.

**Figure 2. Nigeria: Daily Liquidity Forecast Errors**  
(Percent deviation from the RM Benchmark)



Source: Staff calculations based on data from the CBN.

11. **More importantly, however, structural source of liquidity in the financial system—oil related transactions—remains lumpy and volatile.** The national oil company NNPC, which sells public share of oil on behalf of the government, deposits receipts in the domestic banks. A few days before the Federation Account Allocation Committee’s monthly meeting, the NNPC transfers oil receipts from banks to the statutory account in the CBN. Within 1-3 days of the FAAC meeting, distributed oil and tax revenues are credited to the accounts of various tiers of the government (federal, states and local governments). Any shortfall in tax revenue is generally offset by additional distribution of oil revenue.

Moreover, oil revenues are used for (extra-budgetary) payments for fuel subsidy and other discretionary spending programs. Thus, spending oil revenue beyond the levels dictated by the budget oil price rule and the current practice of once-a-month distribution of oil and tax revenues make forecasting and managing of liquidity in the banking system difficult. In addition, discretionary distributions of oil savings from the ECA contribute to the difficulties of managing liquidity.

## B. Management of Systemic Liquidity

12. **Considerable efforts have been made to enhance liquidity management.** In June 2007, the CBN introduced a new liquidity management system. The quality of data has also improved considerably, though further improvements are needed to better understand the states and local governments' revenues and expenditures, particularly those that relate to oil. The CBN has been using a variety of instruments to manage liquidity (Box 1). As monetization of oil receipts and other oil-related inflows are the primary source of liquidity, the CBN relies heavily on foreign exchange sales to sterilize systemic liquidity. Most foreign exchange operations are conducted through the bi-weekly auctions offered through the Wholesale Dutch Auction System (WDAS), with published quarterly indicative targets. The issuance of government bills and bonds in primary market and changes in CRR provided the CBN with other instruments to manage systemic liquidity, although in recent years, the CBN has been favoring using foreign exchange sales. The use of Repos and reverse Repos has been increasing.

### Box 1. Instruments of Monetary Policy

The CBN has a wide range of monetary policy instruments to manage liquidity:

#### CBN Policy Rate

The Monetary Policy Rate (MPR), which was introduced in December 2006, is used as the operating target for monetary policy. The MPC sets an interest rate corridor of  $MPR \pm 2$  percentage points as the tolerable margin for the OBB rate. At times, the CBN used asymmetric corridor around the MPR, particularly in the aftermath of the 2009 banking crisis.

#### Instruments for Structural Liquidity

- *Cash reserve requirement (CRR) is mostly unremunerated and measured based on a daily average of reservable liabilities over a two-week period.* It serves prudential, monetary control and liquidity management objectives. Reserve averaging, which was introduced in March 2011, has been suspended in October 2011. The current rate is set at 12 percent (increased from 8 percent in July 2012)—marginal 4 percent is remunerated at standing deposit facility (SDF) rate.
- *Government securities (FGN T-bills and bonds) auctions:* The Debt Management Office and the CBN commit to a quarterly auction schedule for FGN bonds and Nigerian Treasury Bills (NTBs), respectively, based on the Federal Government's funding requirements. These schedules are published. *NTB auctions* held every other week. Week totals within a range that is announced in the beginning of the quarter. The tenors are 91, 182, and 364-days. The 3-month rate is the second most important reference rate used by market participants after the central bank rate (MPR). *FGN-bond auctions* held once every four weeks. The tenors issued up to date have included 2, 3, 5, 10, and 20 years.

### Box 1. Instruments of Monetary Policy (concluded)

- *CBN Bills are sold when additional sterilization is required.* While these are sold as CBN securities; however, once issued, the market does not differentiate between CBN Bills and NTBs. Given this absence of segmentation between the two types of bills, there is no loss of trading liquidity for CBN bills.
- *Sale (and purchase) of foreign exchange is another instrument that helps the CBN influence liquidity in the banking system.* However, main objective of the foreign exchange operations is to ensure stability of the naira. Given the government surrender almost all of foreign exchange from oil sales to the CBN, the central bank is net structural supplier in the market. The CBN supplies around 40 percent of foreign exchange to the market. Because the CBN is able to choose the volumes it sells at the bi-weekly auctions at the WDAS window, this instrument could be used manage liquidity (mostly withdrawals). The CBN typically sells \$2.5 billion a month of foreign exchange as part of its role as structural supplier. In the process, supplying the foreign exchange market with dollars also mops up part of domestic liquidity injection arising from government spending of oil receipts.

#### Instruments for Short-term Liquidity

- *The standing deposit facility provides a floor on rates, with the CBN accepting an unlimited amount from banks on an overnight basis.* The SDF rate serves as the lower bound of the MPR corridor. While banks' excess reserves do not earn interest, a bank or discount house want to earn interest using the SDF must send the CBN Liquidity Management Office (Lagos) a letter by 4 p.m. for transferring funds from their Current Account to the SDF.<sup>3</sup> The principal amount, plus interest, is repaid to the bank automatically on the following business day.
- *The standing lending facility is available to all bank and discount houses upon application, like the SDF. The eligible securities are; NTBs, FGN Bonds, and CBN Bills. The amount of collateral required is set at 110 percent of the amount borrowed, based on nominal and not market values of the securities. The title to the securities is transferred into the CBN's name. A recently agreed Nigerian Master Repo Agreement serves as the basis for the SLF and all secured transactions (e.g., repo and reverse repo).*
- *Repos/reverse repos used to manage liquidity for a few days to a few months. Repos are used to mop up liquidity and reverse repos to inject liquidity. The term repo facility is available out to 90 days, with a rate set at an increasing margin to the MPR for longer-term repos. Reverse repos are available only out to 28 days, with a decreasing margin to the MPR relative to the length of the reverse repo. The eligible securities are; NTBs, FGN Bonds, and CBN Bills. For repos, the CBN holds a portfolio of government securities. Two-way quotes are outright transactions and are used often by the CBN to influence liquidity levels. One obligation of being a Money Market Dealer is to provide two-way quotes in NTBs to other dealers in amounts of ₦250 million and to the CBN in ₦1 billion. When the CBN is buying and a dealer may not have the NTBs in their portfolio, the dealer will have to ask at least four other dealers for prices to cover the position because the CBN transaction is four times the size of a standard market transaction. In addition to management liquidity, another rationale for using this instrument is to provide the CBN information about the market prices of NTBs.*
- Deposit auctions, where banks can bid for deposits at the central bank, have recently been added to the toolkit, but have not yet been used.

<sup>3</sup> Each bank has three accounts; a Cash Reserve Requirement Account, which is blocked (except for one day every two weeks when the requirement is recalculated), a Settlement Account linked to the RTGS system, and a Current Account used for non-RTGS transactions (this account is referred to as the T24 account).

13. **In Nigeria, structural liquidity is more likely to be volatile over time for various reasons.** Oil receipts and related foreign exchange sales of oil companies are expected to remain strong, given high oil prices and large proven reserves for oil and gas, and volatile. The lumpy nature of the disbursements from the Federation Account is also important factor for variation in liquidity. Given that the surplus liquidity is probably more related to foreign exchange inflows during oil booms, one might argue for more sales of foreign exchange and less issuance of domestic debt. The result should be a slightly strong naira and slightly lower interest rates. In this volatile environment, there is an on-going challenge to manage systemic liquidity consistent with the announced policy stance. To align systemic liquidity with the policy stance, the adjustment measures should be based on medium-term forecasts of banking system liquidity. The CBN also needs to recognize the trade-off in sterilizing a unit of spending from oil receipts: cost is either in terms of higher interest rates if used Open Market Operations (OMOs) or an appreciated exchange rate if foreign exchange sales are applied. In either case there is likely to be a cost to the tradable sector of the economy. The goal should be to seek the ‘least cost’ mix of sterilization.

14. **Despite improvements in liquidity management framework, markets appeared, at times, confused about the signals sent from use of specific instruments.** For example, in October 2011, the CBN responded to pressures on the currency and prices by hiking the MPR by 275 bps and doubling the CRR to 8 percent. Then, the CBN immediately reversed the impact of these measures by purchasing nearly two trillion of the Assets Management Corporation of Nigeria (AMCON) bonds and thereby injecting substantial liquidity in the intervened banks.

15. **The recent frequent use of the CRR as instrument needs to be rationalized.** Changes to the CRR require banks to make abrupt adjustments in their portfolios and as a consequence can induce volatility in financial market prices. The CRR is best used to create a stable demand for reserves consistent with the level of systemic liquidity. Some countries have used high cash reserve ratios mainly to sterilize substantial capital inflows in the context of managed foreign exchange rate regimes (e.g., China and Brazil). However, most countries keep this ratio low and stable. An increase in the CRR, particularly when it is unremunerated, imposes additional costs on banks, which then get passed on to the economy in the form of wider interest rate spreads. It is estimated that where banks have constant costs per unit of deposit, a 2 percent increase in the level of the CRR adds approximately 0.5 percent to the spread between deposit and lending rates (Appendix 2). Therefore, changes in the ratio should be infrequent and made only when there is a strong reason not to use market-based instruments (i.e., Government/CBN securities and foreign exchange sales).

16. **Reserve averaging is particularly useful for the banking system where liquidity forecast errors are large.** The RA provides banks room to manage their liquidity and comply with CRR using the average of end-of-day balances over the maintenance period (often between two weeks to a month). It helps reduce daily volatility in the overnight rates because banks do not have to immediately adjust for a deficit in their CRR account. As banks

need to manage their CRR balances over a period (instead of at the end of every day), any forecast errors or changes in liquidity supply has a weaker impact on short-term interest rates, as observed during March-October 2011. However, the RA provides banks an opportunity to take larger positions in the interbank market for part of the CRR maintenance period by drawing their reserves down to zero. Such a behavior may destabilize the markets, particularly if cash reserve requirement is high (e.g., 10 percent or more). However, the CBN could address such a concern by allowing partial averaging, which requires placing a minimum ratio of reserves that banks must adhere to at all times (say half of the currently high CRR), while the overall CRR is subject to reserve averaging that is over a month long period to align the maintenance period with the distribution of oil revenue.

### C. Management of Short-Term Liquidity

17. **The CBN has also sufficient instruments for short-term liquidity management.** The Monetary Policy Rate (MPR) corridor serves as a signaling device for the monetary policy stance. While use of the overnight facilities (Standing Deposit Facility and Standing Lending Facility) is at the banks' discretion, the CBN is able to use repo operations and outright transactions (e.g., 2-way quotes) to manage day-to-day liquidity and guide short-term interest rates towards the MPR (Box 1). In addition, the CBN sells or buys directly foreign exchange in the interbank market, in addition to pre-announced foreign exchange sales through WDAS, and is increasingly engaging in foreign exchange swaps and forward contracts, which commenced in March 2011 and are growing. With few exceptions, the CBN has used these instruments effectively.

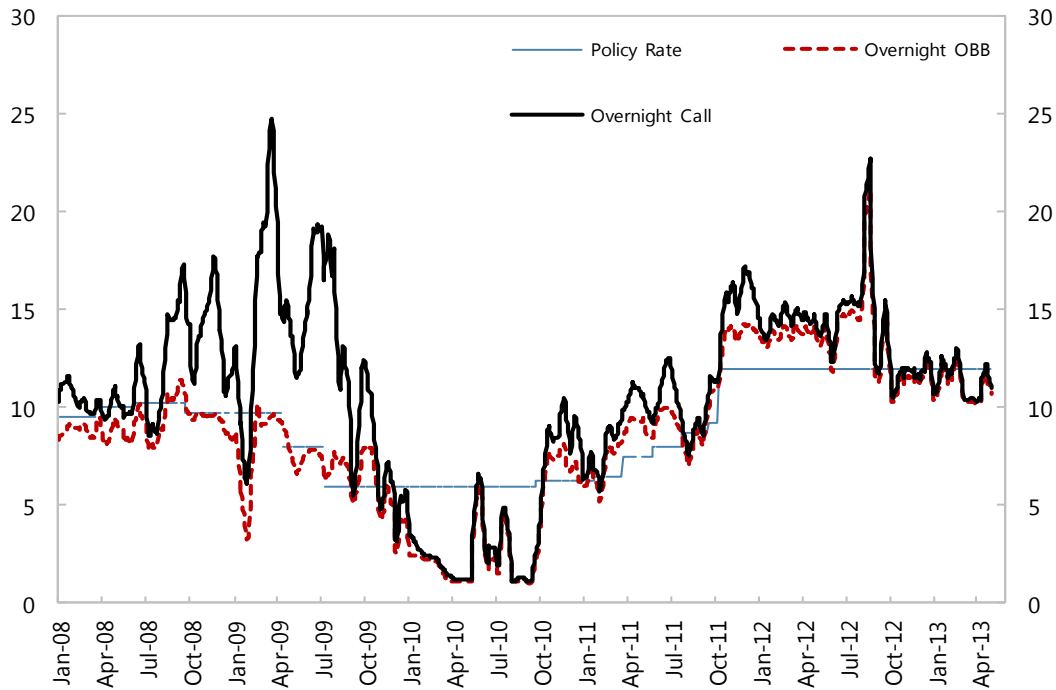
## IV. FUNCTIONING OF FINANCIAL MARKETS AND LIQUIDITY MANAGEMENT

### A. Money Markets

18. **Money market activity remains relatively low despite attempts to promote this market.** The volatility in both the interbank and OBB rates is high (Figure 3), reflecting volatility in the underlying liquidity base. Thus, the weighted average of the unsecured call rate ranged from 3 percent to 30 percent, although the OBB rate was much more constrained because of the ceiling provided by the CBN overnight lending facility.<sup>4</sup> Understandably, the interbank rate on any given day was much more volatile and traded with a spread over the OBB rate. However, the credit worthiness of the borrowing bank was cited as the main reason for large spread, which occasionally surpassed ten percentage points.

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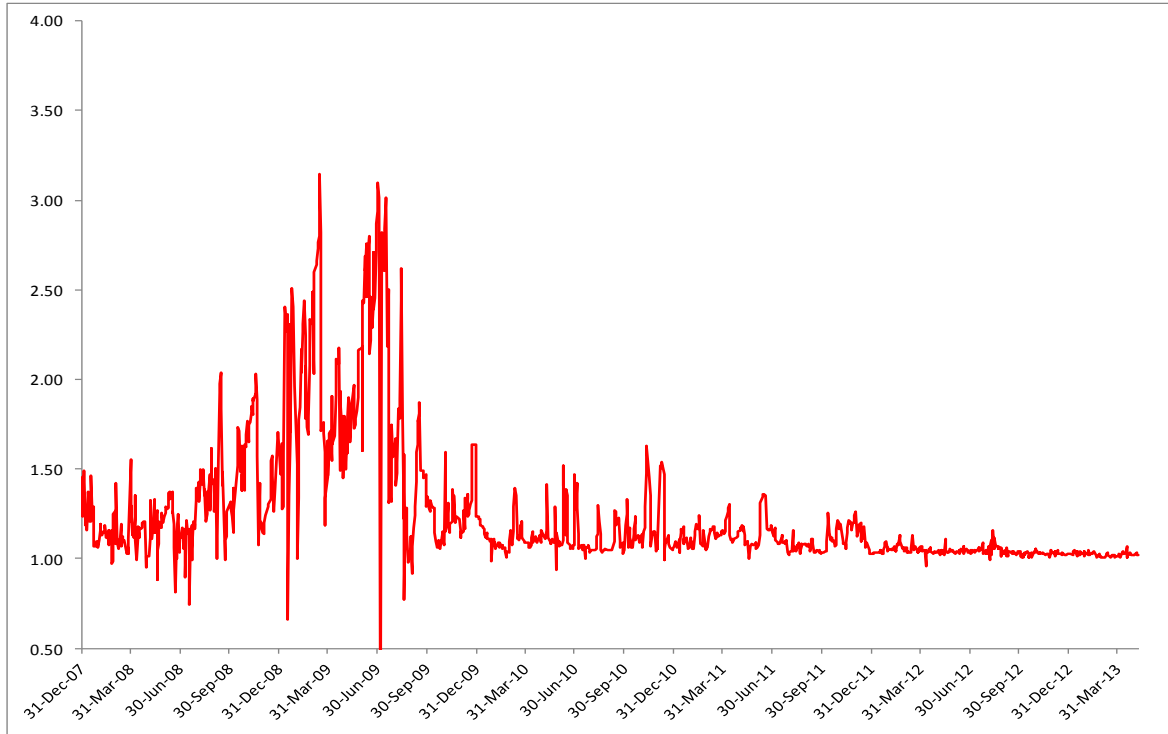
<sup>4</sup> Banks can borrow from the CBN through the SLF using eligible collateral, which put a cap on the OBB rate. However, OBB rate has occasionally surpassed the upper bank of the CBN interest corridor (Figure 1).

**Figure 3. Nigeria: Developments in Money Market Interest Rates**

Source: CBN.

19. **Since the 2009 banking crisis, the volatility and spread in the interbank rate has declined significantly.** The risk premium for unsecured lending shot up quickly in 2009 prior to the banking crisis and this segment of the money market was practically shut down until the CBN offered guarantees for the interbank transactions in July 2009. The call rate margin over the OBB rate was particularly high and very volatile in the late 2008 and most of 2009, partly indicating the market participants were aware of severe counter-party risks much before the CBN's special audits in August 2009. However, since then, this risk premium has been declining gradually (Figure 4) in part because of the CBN's guarantees through end-2011, the expansion in useable collaterals (e.g., government bonds) and the purchases of nonperforming assets by the asset management company AMCON.

**Figure 4. Nigeria: Spread between Secured (OBB) Rate and Interbank (Call) Rate**

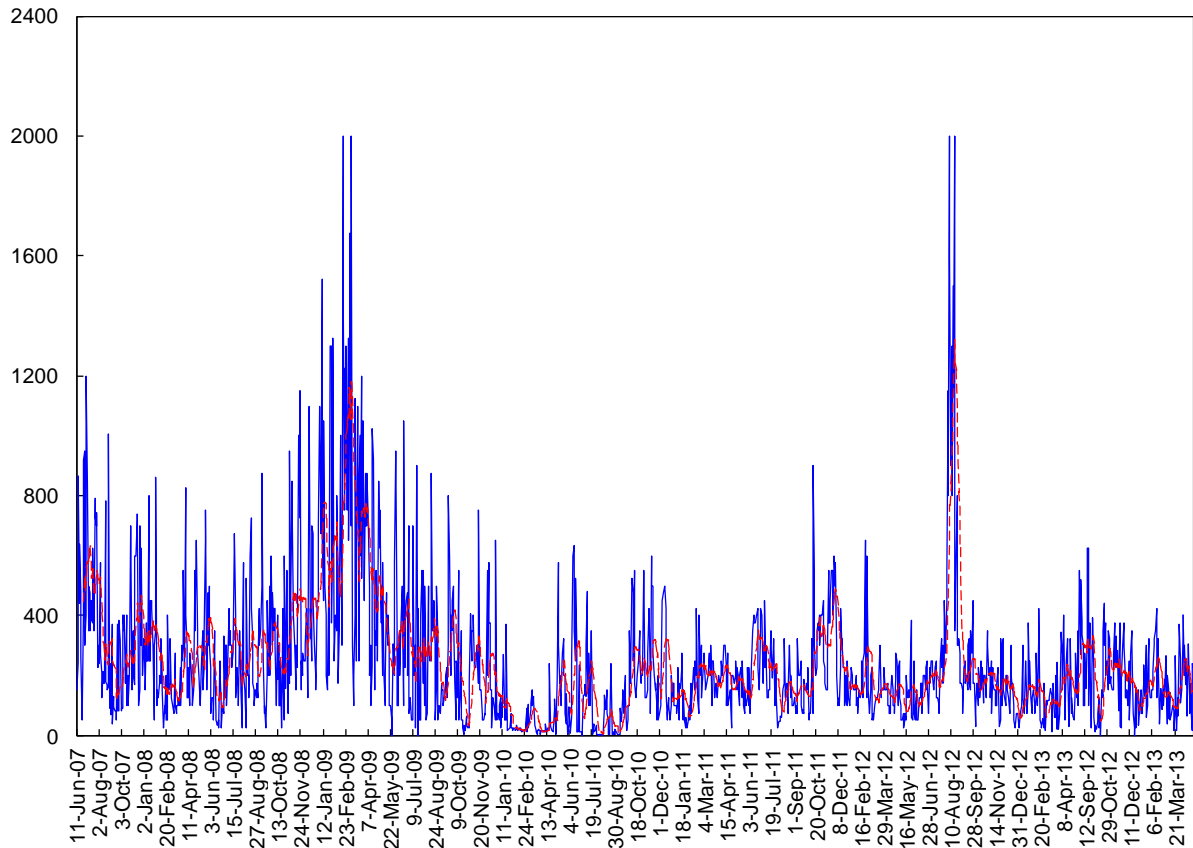


Source: Staff calculations based on data from the CBN.

**20. Despite recent improvements, several factors are constraining the effective functioning of the interbank money markets:**

- A key remaining challenge is segmentation in the money markets on the basis of perceived credit risks, which constrains the efficient pricing of liquidity. Various factors contribute to this segmentation. As rates for standing facilities have increased, banks with excess liquidity appear to prefer deploying their funds with the central bank instead of supplying into the interbank market. Moreover, concerns about counterparty risk, while diminished substantially, remain a cause for depressed activity in money market. In general, smaller banks that are considered to involve higher credit risk have little or no access to credit from banks with surplus liquidity. Another indicator of market segmentation is observed in the range between the lowest and the highest call rate on a given day. While variation in risk premia across many market participants is normal, the interbank market in Nigeria is not functioning effectively as some banks face prohibitively high interbank rates (Text figure 2). Occasionally, the range of call overnight rate reaches as high as 20 percent. The CBN has been addressing segmentation issues in the market through strengthening of bank supervision.*

**Figure 5. Nigeria: Interbank Interest Rates—Daily Call Rate Margin and 10-Day Moving Average (basis points)**



Source: Staff calculations based on data from the CBN.

- Persistent excess liquidity is another major impediment to money market development in Nigeria.* On most days, a majority of banks have excess liquidity, and few (probably weak) banks have liquidity shortfalls. Admitting AMCON bonds for discount window operations<sup>5</sup> increased the liquidity in the money market. At the same time, banks have increased their precautionary balances. Moreover, banks are cautious in extending credit to the private sector, which started to pick up only in recent months. As a result, there is constant excess liquidity with the most market participants.
- The underlying liquidity conditions of the market fluctuate significantly because of fiscal operations.* Operations related to the oil revenue and the Federation Account

<sup>5</sup> The AMCON issued close to 5.3 trillion worth of recapitalization bonds to purchase NPLs from banks and inject capital in troubled banks. Once these bonds were admitted for discount window, banks placed over half of these bonds with the CBN to acquire liquidity, instead of using money market.



generate large movements in the available liquidity, and if the CBN is not able to meet the liquidity demanded by banks, pressures is exerted on the interbank rates and their volatility is amplified. While the CBN made progress in managing liquidity impact of government operations, more needs to be done to minimize the liquidity forecast problems arising from such operations.

- *Finally, markets' perception of the monetary policy framework, particularly as regards the operating target, also contributes to the volatility of the interbank market.* Market participants have noted that the CBN was sometimes focused on multiple objectives that could potentially require conflicting policy actions (e.g., financial stability issues vs. price stability in the aftermath of the banking crisis). As a result, the liquidity management strategy is not effective leading to significant volatility in the liquidity base both within the month and between months. Further strengthening of liquidity management strategy should guide liquidity conditions consistent with announced targets (i.e., MPR) and in a way that minimizes disturbances to the liquidity base.

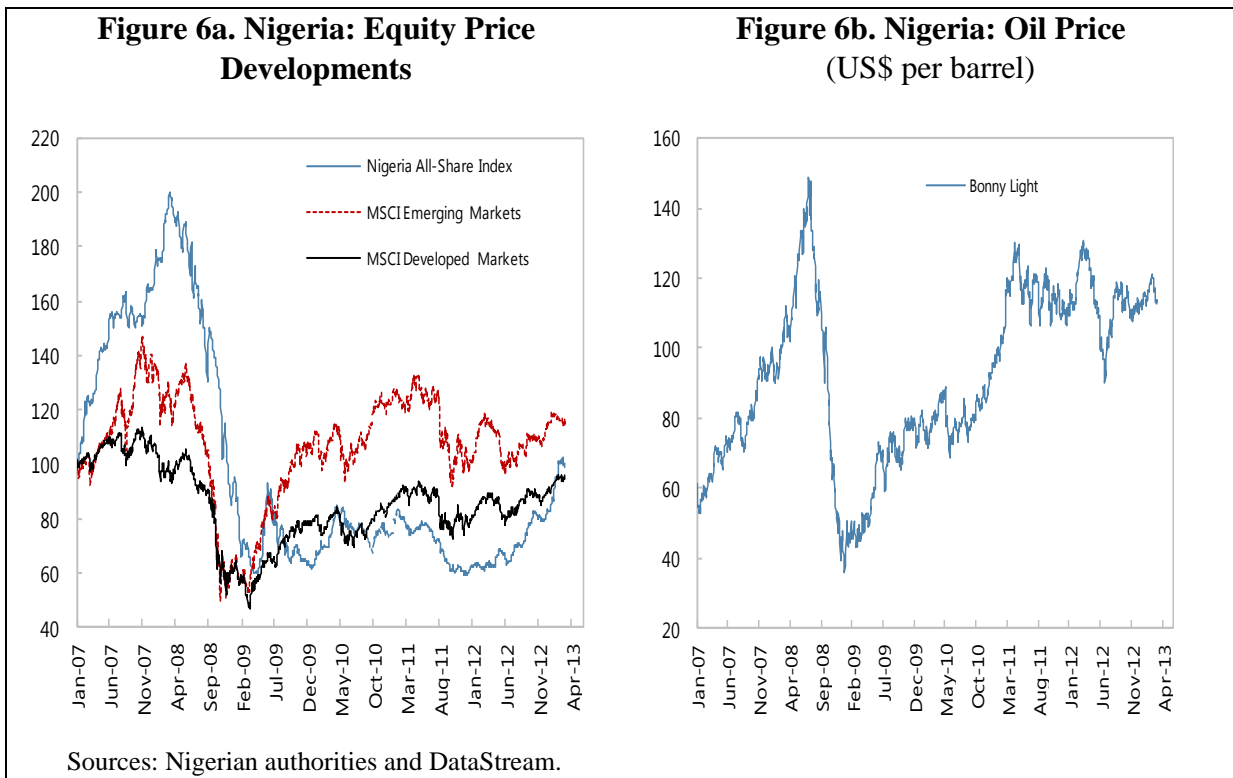
**21. The CBN can promote the interbank markets and their role in liquidity management through following additional steps.**

- Use its full array of instruments to ensure that it supplies at a minimum sufficient liquidity to meet banks' demand for reserves, particularly to address large intra-month swings in the autonomous supply of liquidity.
- Clearly articulate the monetary framework so that market participants understand better the operating target of monetary policy.
- Seek to improve liquidity forecasting, especially for liquidity movements related to government operations. As noted earlier, the CBN had made substantial progress in forecasting and managing liquidity, but oil-related government operations remain a source of large forecast errors.

**B. The Foreign Exchange Market**

**22. Considerable progress has been made in developing a robust interbank foreign exchange market.** All banks in Nigeria are authorized to deal in foreign exchange. In addition, there is large number of *Bureau de Change* (BDCs) that are engaged in retail foreign exchange business. The CBN is involved in the market both as an intermediary of government-related foreign exchange transactions and to implement its foreign exchange policy. The CBN is a large net supplier of foreign exchange, though occasionally purchases foreign exchange to build its reserves. Banks deal with the CBN on a competitive basis through the Wholesale Dutch Auction System (WDAS) and sometimes also directly in the interbank market.

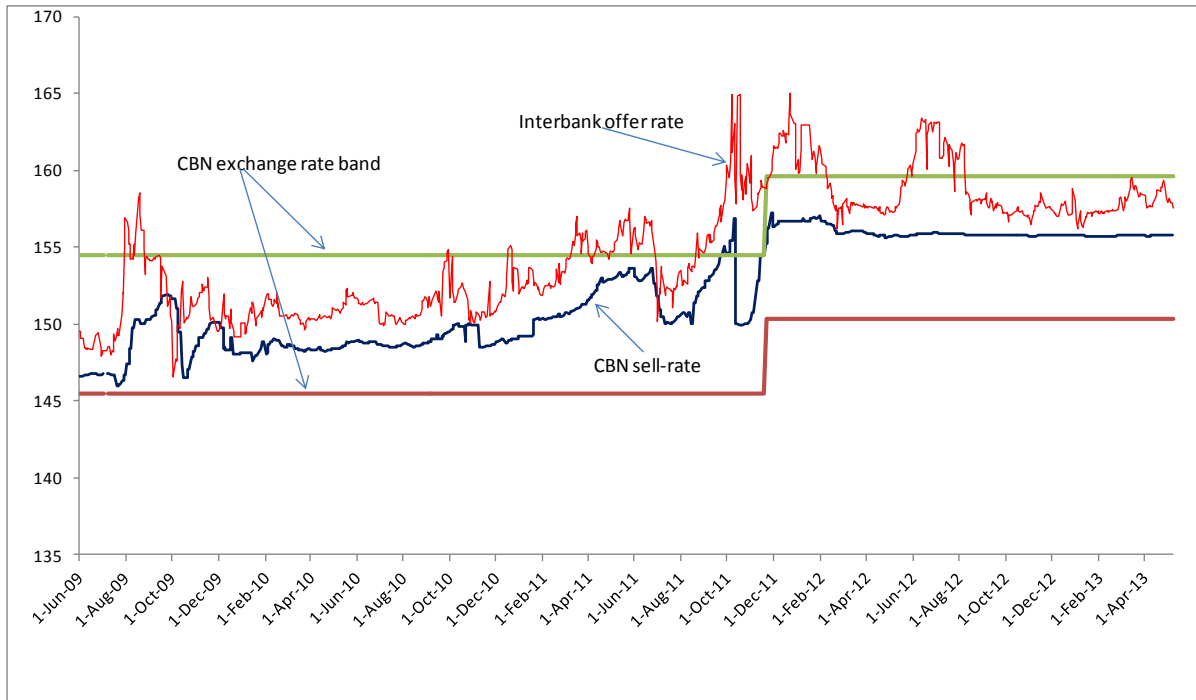
23. **The twin shocks of 2008 (the stock market and oil prices collapses) tested the foreign exchange market.** Prior to these crises (Figures 6a and 6b), the foreign exchange markets functioned well as exchange rates in three key markets—the WDAS, interbank, and the BDCs—tracked each other closely. In the aftermath of the shocks, the pressures on the currency increased but the CBN kept the exchange rate in a tight range during most of 2008 by selling reserves. However, toward the end of 2008, as pressures intensified, the CBN was unwilling to meet the increased market demand arising from capital outflow and unhedged importers. At that point, the CBN adjusted the exchange rate band by nearly 25 percent. However, pressures on the currency did not abate, and in January 2009, the CBN introduced many administrative restrictions in the foreign exchange market in an attempt to restore market order and stem depreciation. By mid-2009, as the exchange rate stabilized partly on account of recovery of oil prices, the CBN removed all restrictions and reintroduced the normal functioning of the market, including the WDAS.



24. **Current functioning of the market:** In Nigeria, a need for monetizing large volumes of foreign exchange from government oil revenue makes it difficult for the CBN to transact in the market in a way that differentiates its roles as a structural net supplier of foreign exchange from intervention for the signaling purposes. To address this issue, the central bank has taken steps. Sales of foreign exchange as a net supplier role are generally preannounced (for the WDAS segment), though the coverage period could be lengthen beyond a quarter year. The central bank provided guidance to the market through an exchange rate band. The approach worked well for most part; however, in mid-2011, pressures on the currency reappeared, partly due to increased foreign exchange demand for fuel imports. As the

international reserves were nearly half of the levels observed at the peak in September 2008, the central bank adjusted the band in October 2011 (Figure 5). The central bank has also frequently used net open positions of banks as well as restriction on the use of WDAS purchases to manage demand for foreign exchange.<sup>6</sup> While these measures helped in reducing volatility in the official rate, it also reduces volume in the interbank foreign exchange market. Moreover, while most foreign exchange transactions are on a spot basis, the central bank has been taking many steps since 2011 to promote forward transactions.

**Figure 7. Nigeria: Key Exchange Rates in the Market**



Sources: CBN and FMDA.

**25. Despite substantial efforts to strengthen the foreign exchange market, a number of factors continue to impede development of this market:**

- *The CBN need to further clarify and adhere to its exchange rate policy within the context of the monetary framework.* For example, excess use of foreign exchange sales for the sterilization requirement can add to the confusion about CBN operating targets. Similarly, credibility is lost when previously defended levels give way. The challenge for the CBN is to determine the mix of instruments (foreign exchange sales,

<sup>6</sup> For example, between December 2008 and July 2009, the allowable foreign exchange net open position for banks was modified five times with a range of 20 percent to 1 percent of shareholders' fund.

cash reserve requirements, OMOs) that results in the minimum impact on the exchange rate while achieving monetary policy targets.

- *In this context, the CBN need to better differentiate its role as a structural net supplier of foreign exchange from its interventions in the market to dampen excessive rate volatility.* To achieve this, the CBN can set a program of foreign exchange auctions (emanating from monetizing the government oil revenue) on a quarterly basis, once the sterilization requirement and instrument mix are determined. This pre-announced schedule could be used with some flexibility (for example, up to 10 percent deviation from the scheduled volume) to allow for variation through the quarter as conditions changed. This pre-announced structural supply of foreign exchange is expected to minimize the impact on the exchange rate.
- *To build credibility and effectiveness of the policy of pre-announced structural supply requires that the CBN should implement the announced volumes at auctions.* Frequent large deviation from the pre-announced volumes could weaken the signal as to how much the CBN is prepared to sell at any given auction. Major change in volumes offered would have to occur only from one quarter to the next. Adhering broadly to pre-announced auction volumes over a quarter implies that there will likely be greater flexibility in the exchange rate.
- *Still, there is a need to refine the CBN's intervention policy to address any excessive short-term volatility in exchange rate.* Besides its net supplier role, the central bank also needs to respond to occasional excessive rate volatility. As happened in recent years, exchange rate pressures have stemmed mainly from volatile oil prices and resulted in increased volatility in the rates. The differentiation between permanent and temporary changes in oil prices and other economic fundamentals is not easy, and therefore, the market should be allowed to move within a sufficiently wide range so that an orderly adjustment can occur in response to changes in the fundamentals. Nevertheless, it is also desirable to limit short-term volatility in the exchange rate, partly because it helps reduce market break down. For example, the CBN can assess the market behavior by observing buy/sell spreads in the interbank market and short-term volatility and directly communicating with the market makers. Increased short-term volatility with widening buy/sell spreads in the interbank market and shrinking volumes could lead to market breakdown. For such circumstances, the CBN will need to refine its intervention policy. If interventions in the foreign exchange markets are undertaken to cope with excessive volatility, there is also a need for an offsetting adjustment in open market operations to achieve monetary policy targets.

## V. RECOMMENDATIONS

- Clarify overall monetary framework to avoid impression of pursuit of multiple objectives. Balancing macroeconomic stability against financial stability is not always

easy, clear communication of policy objectives and targets to markets could increase transparency and effectiveness. In this context, the CBN needs to strike a balance between the use of foreign exchange sales and domestic instruments for liquidity management.

- Further strengthen coordination between the fiscal and monetary authorities. The weekly meetings of the Fiscal Liquidity Assessment Committee (FLAC), which is comprised of representatives from the CBN and FGN ministries, departments and agencies, has helped improved liquidity forecast. However, once-a-month distribution of oil revenue and selective taxes creates lumpy shifts in liquidity. Consideration should be given to fortnightly distribution of these statutory allocations of revenue.
- While implementation of the Single Treasury Account (STA) for Federal Government funds would help improve management of liquidity in the banking system, cautious transition is desirable to allow banks adjust to the new system. In the current pre-Single Treasury Account (STA) arrangements, banks have idle cash float of FGN funds that they can use to extend credit and increase liquidity in the system. As the STA becomes fully operational, these idle funds will revert to the CBN at the end of each day and thus automatically sterilized.
- Strengthen the signaling role of MPR corridor, including through clear communication of policy decisions to the market. For example, market perceived that the CBN had changed the signal for monetary policy from the MPR to the SLF rate in late 2011, while the CBN confirmed that the signal remains the MPR.
- Given abrupt nature of changes in cash reserve requirements, using CRR changes as an instrument for monetary policy should be infrequent and only when there is a strong reason for not using market-based instruments.
- Remove the suspension on cash reserve averaging and introduce modifications in the averaging method that could address the CBN concerns. Implementing a two-step CRR could be considered: a primary CRR (about half of the total CRR) could be fulfilled on daily basis similarly to the current arrangements, while the overall CRR is subjected to the averaging mechanism that is a month long to align the maintenance period with the distribution of oil revenues.
- To reduce segmentation in the money market, the central bank needs to address the remaining gaps in bank supervision framework and take measures to enhance credibility of its assessment of banks' health.
- Promote the interbank market, including through managing structural liquidity consistent with banks' demand for reserves and addressing large intra-month swings in the supply of liquidity.

- Make concerted efforts to strengthen financial infrastructure that promote banks lending to private sector. It will help enhance monetary transmission of policy changes and manage better systemic liquidity in the banking system.
- Develop a clear and credible mechanism to separate the central bank's role as a structural supplier of foreign exchange from its interventions in the market to dampen excess volatility in the exchange rate. In this context, refine the CBN's intervention policy to allow for greater flexibility in the exchange rate without compromising on stability of the exchange system.

**Appendix I. Daily Liquidity Forecast Template and Forecast Error**  
(September 2012)

	Forecast (Naira billion)	Realized (Naira billion)	Forecast Error	Notes
<b>(4) Opening Balance (Actual DMBs Balances at t-1)</b>	<b>54</b>	<b>54</b>	0	
<b>(5) CIC (41t-41t-1)</b>	<b>-1</b>	<b>-2</b>	-1	
<b>(6) FGN Operations Sum(7 to 9)</b>	<b>-5</b>	<b>3</b>	8	2nd major source of forecast error
(7) Revenue	-7	-8	-1	
(8) Expenditure	2	11	9	
(9) Net Financing	0	0	0	
<b>(10) FAAC / NNPC / JVC Sum(11 to 15)</b>	<b>-30</b>	<b>5</b>	35	
(11) FAAC (State & LGA)	0	0	0	
(12) NNPC	-30	0	30	Main source of forecast error on this day
(13) JVC	0	0	0	
(14) NNPC Sales to CBN			0	
(15) BOI/NEXIM	0	5	5	
<b>(16) CBN Operations (17 + 24)</b>	<b>-29</b>	<b>0</b>	29	
(17) Foreign Exchange Sum (18 - 23)	0	0	0	
(18) WDAS - SPT	0	0	0	
(19) WDAS - FWD	0	0	0	
(20) BDCs	0	0	0	
(21) Inter-bank Trancastions	0	0	0	
(22) Swap Transactions			0	
(23) Other	0	0	0	
<b>(24) Domestic Sum( 25 to 31)</b>	<b>-29</b>	<b>0</b>	29	
(25) CBN Bills - OMO Auction (-) /Amcon Injections	0	0	0	
(26) CBN Bills- OMO Maturity(+)	0	0	0	
(27) Repo (+)	0	0	0	
(28) Repo Maturity (-)	0	0	0	
(29) SLF (+)	0	65	65	SLF activity for period "t" is not forecasted
(30) SLF Repayment (-)	-42	-42	0	
(31) SDF (-)	0	-36	-36	SDF activity for period "t" is not forecasted
(32) SDF Repayment (+)	13	13	0	
(33) Other (Two-way-qoute)	0	0	0	
(34) change in CRR	0	0	0	
<b>(35) Total Reserves - pre OMO (4+5+6+10+16)</b>	<b>-11</b>	<b>59</b>	71	
<b>(36) CRR (DMBs)</b>	<b>0</b>	<b>0</b>	0	
<b>(37) Daily Excess Reserves - Pre CBN intervention (3</b>	<b>-11</b>	<b>59</b>	71	
(38) Demand for Reserve (Consistent with MPR)	40	40	0	
<b>(39) Surplus / Deficit (32 - 33)</b>	<b>-51</b>	<b>19</b>	71	Total forecast error; of which SDF/SLF activities 0 On date "t" amount to N29 billion.
<b>(40) Expected Operation By CBN</b>	<b>0</b>	<b>0</b>	0	No operations by the CBN on this particular day
<b>(41) Expected Closing Balance (35 + 40)</b>	<b>-11</b>	<b>59</b>	71	

Source: CBN.

## Appendix II. Impact of Reserve Requirements on Interest Rate Spreads

The impact of unremunerated CRR on interest spreads depends on the average costs of funds and the level of the reserve requirement.<sup>7</sup> This relationship between the loan rate, the deposit rate and CRR can be expressed by the following income identity of a commercial bank (per unit of deposit):

$$(1 - \text{CRR})L_i + R_i = D_i + C_a + p$$

Where:

CRR= the cash reserve requirement ratio, typically varies between 0 and 0.25.  
 $L_i$  = the interest rate on loans;  $D_i$  = interest rate on deposits (cost of funds);  
 $R_i$  = the interest rate on required reserved if such reserves are remunerated,  
 $C_a$  = the administrative costs per unit of deposits (excluding cost of funds); and  
 $p$  = normal profits per unit of deposit (typically assumed in 10-15 percent range).

Assuming no interest is paid on cash reserve requirements, the income identity is as follow:

$$(1 - \text{CRR})L_i = D_i + C_a + p \quad [1]$$

Using definition of net interest spreads ( $S_i$ ) as difference between lending and deposit rates and substituting  $L_i$  from the income identity, we find relation between the spread and CRR:

$$\begin{aligned} S_i &= L_i - D_i \\ &= \frac{D_i + C_a + p}{(1 - \text{CRR})} - D_i = \frac{\text{CRR} * D_i + C_a + p}{(1 - \text{CRR})} \quad [2] \end{aligned}$$

To begin with, administrative costs and normal profit in terms of per unit of deposit ( $C_a + p$ ) need to be specified. There is substantial evidence that administrative costs per unit of deposit are much higher than large financial systems in SSA and developing world. Instead of determining “ $C_a$ ” and “ $p$ ” separately, we approximate these together and then held constant as the CRR is changed to identify the impact on the interest rate spread.

***Nigerian case for ( $C_a + p$ ):*** In Nigeria, administrative costs per unit of deposit are reported to be very high due to energy shortages and other infrastructure weaknesses. Evidence from comparison of overhead costs in Nigerian banking system with other emerging markets collaborate this high administrative costs scenario. Therefore, in this alternative scenario, these costs plus profit is assumed at 20 percent.<sup>8</sup>

<sup>7</sup> This Annex is based on IMF Operational Paper OP/96/01, “The Use of Reserve Requirements in Monetary Control Operational; Features and Country Practices,” (2001).

<sup>8</sup> This can be collaborated with observed interest rate spread in Nigeria. By rewriting the income identity as  $(C_a + p) = (1 - \text{CRR}) * L_i - D_i$  and using typical values for CRR,  $L_i$  and  $D_i$  observed in recent years in Nigeria, we can estimate the administrative cost plus profit. For example, CRR = 2 percent,  $L_i$  = 20 percent, and  $D_i$  = 2.5 percent, will produce  $(C_a + p) = 19.6$  percent.



**A lower ( $C_a + p$ ) scenario:** Typically an efficient financial intermediation system has lower administrative costs than observed in Nigeria. If these costs are reduced, by removing structural bottlenecks, to around 5 percent of a unit of deposit and profit rate remains around 10 percent, the ( $C_a + p$ ) term will decline to 15 percent. This will not only reduce the interest rate spread but also reduce the sensitivity of this spread with respect to changes in the CRR.

Using these values for ( $C_a + p$ ), the relationship between net interest spreads ( $S_i$ ) and various levels of CRR is estimated based on equation [2]. The results are reported in the following tables.

**Appendix Table 1. Nigeria: Impact of Changes in the CRR on Interest Rate Spreads—  
High Administrative Costs Case**

Cash Reserve Requirement (percent)	Estimated Spread (percent)	Change in Spread (percent)	Cumulative Change in Spread (percent)
0	20.0	-	-
2	20.5	0.46	0.46
4	20.9	0.48	0.94
6	21.4	0.50	1.44
8	22.0	0.52	1.96
10	22.5	0.54	2.50
12	23.1	0.57	3.07
14	23.7	0.59	3.66
16	24.3	0.62	4.29

**Appendix Table 2. Nigeria: Impact of Changes in the CRR on Interest Rate Spreads—  
Lower Administrative Costs Case**

Cash Reserve Requirement (percent)	Estimated Spread (percent)	Change in Spread (percent)	Cumulative Change in Spread (percent)
0	15.0	-	-
2	15.4	0.36	0.36
4	15.7	0.37	0.73
6	16.1	0.39	1.12
8	16.5	0.40	1.52
10	16.9	0.42	1.94
12	17.4	0.44	2.39
14	17.8	0.46	2.85
16	18.3	0.48	3.33