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Liquidity forecasting: Nigeria's experience

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LIQUIDITY FORECASTING: NIGERIA'S EXPERIENCE²⁴

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1. Introduction

The central focus of most central banks is to ensure price stability through the operation of monetary policy. To assist central banks to achieve the mandate of price stability requires effective liquidity management in addition to some tools to analyze development in the economy. One of these is liquidity forecasting. By liquidity, we refer to reserves (deposits) of the banking system held with the central bank. Liquidity forecasting involves forecasting the autonomous components to identify the path of reserves in the absence of central bank intervention. The main purpose of producing short term liquidity forecast is to determine what actions need to be taken to ensure that financial prices move consistently with announced operating targets.

Liquidity forecasting is a critical element in the overall monetary management framework. This is because it determines whether a liquidity shortage-injection or surplus-absorption is required for effective monetary policy. It also provides short horizon input for tracking day-to-day changes in Central Bank balance sheet, currency in circulation and bank reserves as well as the forecast of their future values. The overall objective of liquidity forecasting is to provide quantitative guidance for the appropriate level and direction of monetary operations. Having an accurate liquidity forecast helps to reduce the volatility in the market rates; mitigates credit, markets and liquidity risk on Central Bank's balance sheet; flattering money market yield curve; achieve stable exchange rate; and promotes credibility of Central Bank's actions in monetary policy

implementation. With the information from daily liquidity forecasting it assist monetary authorities to achieve set targets.

This paper discusses the experience of the Central Bank of Nigeria (CBN) in liquidity forecasting by examining the key components of the Central Bank balance sheet. The rest of the paper is divided into four sections; following this section is the conceptual framework in section two. Section three covers Nigerian experience in liquidity forecasting and techniques employed while section four contains the challenges of liquidity forecasting in Nigeria and the way forward. Section five concludes the paper.

2.0 Conceptual Framework

Liquidity is defined in different ways by different people and for different occasions. In the macroeconomic concept, liquidity refers to the overall monetary conditions, indicating the extent of mismatch between demand and supply of overall monetary resources, (Reserve Bank of India, 2002). In the context of the financial markets, however, it is narrowly defined as the ease of undertaking transactions in financial assets at narrow bid-ask spreads. It could also be defined as the availability of funds, or assurance that funds would be available, to honour all cash outflow commitments (both on- and off-balance sheet) as they fall due (Bank of Jamaica, 2005). Money in its basic form of bank notes and coins is the most liquid asset and is held for its usability as a medium of exchange, store of value or both. In constructing monetary aggregates, it is necessary to evaluate the degree of moneyness of a wide range of financial assets focusing on the extent to which each type provides liquidity and a store of value. Liquidity, therefore, refers to the extent to which financial assets can be sold at, or close to, full market value on short notice. To this end, the most liquid financial assets are currency and transferable deposits as they are exchangeable immediately at their full nominal value to acquire goods and services, as well as financial and non-financial assets. Financial assets other than currency and transferable deposits must possess some liquidity features to be included in liquid instruments and monetary aggregates. Another dimension to

²⁴The views expressed in the paper are those of the author and do not in any way represent the official position or thinking of the Central Bank of Nigeria. The author acknowledges the comments and criticisms of anonymous reviewer.

liquidity is the availability of credit; or the ability of institutions to borrow or take on leverage.

The definition of monetary base differs from one country to another, and even within a country. More than one definition may be employed depending on the analytical use. Broadly speaking, it would include all central bank liabilities to the financial corporations and other sectors (excluding central government holdings of Central Bank liabilities other than currency). A narrower definition, however, would exclude some categories of Central Bank liabilities to other depository corporations, other financial corporations and/or other sectors (IMF, 2000).

From the Central Banking perspective, liquidity refers to the liabilities of the Central Bank (especially currency and banking system reserves) otherwise called the monetary base (Gray, 2007) of which it is the sole supplier (Reserve Bank of India, 2002). Monetary base is also referred to as high-powered money. Its supply depends on the public's demand for currencies, which is determined by the size of monetary transactions and the opportunity cost of holding money, as well as on the banking system's need for reserves to discharge their payment obligations. Thus, the Central Bank supplies the banking system with liquidity through its operations in the inter-bank money market with the deposit money banks (DMBs). In fulfilling these needs, Central

Bank attempts to monitor and control liquidity conditions by varying the supply of bank reserves to ensure smooth functioning and stability of financial markets. This is best achieved using some tools such as reserve requirements and policy rates in the overall context of monetary policy.

The demand for and supply of liquidity can be derived from the Central Bank's analytical balance sheet.

Table 1 below shows stylized Central Bank balance sheet IMF (2000).

From the above table the liability side consists of reserve money (RM) which is composed of currency in circulation and bank reserves (required reserves and excess reserves).

2.1 Autonomous Factors of Supply of Bank Reserves

The autonomous factors are factors that are beyond the control of the Central Bank. These factors are very volatile and difficult to forecast, particularly in countries with exchange rate pegs and large foreign exchange interventions. The factors are as follows;

- a) Net Position of the government at the Central Bank: This is the cash flow projection in which the net position with the Central Bank is affected by the government's expenditures (including servicing of government debt) and revenues (including grants)

and new borrowing from market.

- b) Net Foreign Assets (NFA): Changes in NFA is attributable to Central Bank interventions in foreign exchange market. On a day-to-day basis, it is mainly short term capital flows, which can create an excess demand supply for the currency and are most relevant for short-run liquidity forecasting purposes.

- c) Currency in circulation (CIC): It is defined as all notes and coins held outside the Central Bank and removed by debiting or crediting banking system's reserves as banks pay for CIC by having their reserves account with the Central Bank. Increase in CIC has a negative impact on the bank reserves and vice versa all notes and coins held outside the banking system's reserve. Long-run determinants of currency demand include scaling variable such as GDP or private consumption, exchange rate, interest rate, inflation, seasonal dummies.

- d) Other Items net: Items not assigned to other categories in the analytical balance sheet of the Central Bank.

The supply of bank reserve on the other hand, can be defined as the sum of the autonomous liquidity position and the policy action of the monetary authorities. It can be derived thus: Supply of bank reserves = Net foreign asset + net position of government + other items net + currency in circulation + lending to banks/ OMOs. The first four items constitute the autonomous factors. These are factors that are not under control of the central bank and thus need to be forecast. There may be other sources of autonomous, such as the 'float'²⁷ in the payment system,

Table 1: Stylized Central Bank Balance Sheet.

<u>Assets</u>	<u>Liabilities</u>
Net foreign assets	Currency in circulation
Net position of the government	Banks' reserves
Lending to banks/OMO	
Other items net	

²⁷Float is defined in this context as some cash flow that does not occur often

which are important for some countries but not for others. Some items may be irregular. For instance, foreign exchange inflows relating to a privatization programme may have some impact for a few days around the time of privatization only. Also at times profit remittance to the government may happen thrice or thereabout in a year. Therefore, account need to be taken when they happen.

The conduct of liquidity forecasting is the same irrespective of the operating target (quantity or interest rates) of a particular central bank. Liquidity forecasting is therefore, a key component of a central bank's liquidity management framework with the objective of smoothing undesirable fluctuations that could distort the implementation of monetary policy and result in excessive overall market liquidity leading to loss of clarity about the operating target. An accurate liquidity forecast is an essential first step in monetary policy implementation.

The central focus of liquidity forecasting entails collating all relevant information to arrive at the future position of liquidity if nothing is done by the central bank. The outcome of the forecast provide an insight of the direction of liquidity in the system whether a liquidity shortage/injection or liquidity surplus-absorption is required to implement monetary. Liquidity forecasting is therefore, an integral part of liquidity management, which is carried out prior to operation of monetary actions. All depends on how monetary policy objectives are stated.

The task of liquidity forecasting comprises: (i) developing a consistent and coherent framework for capturing expected changes in the Central Bank balance sheet (ii) frequent

contact and communication with all the relevant information sources of data (iii) preliminary data checking to ascertain the consistency of forecasted components (iv) Producing liquidity projection of all the components on daily basis (v) Computing the deviation of the forecast from the actual to obtain the forecast error.

3.0 The Nigerian Experience in Liquidity Forecasting

The banking system in Nigeria is characterized by mixed liquidity position from surfeit position to extreme shortage and is quite volatile in some periods. Prior to 1992/93 when direct control framework of monetary policy held sway, liquidity forecasting was not required for monetary management. It was managed through administratively fixed credit ceilings, sectoral allocation of credit, liquidity ratios, interest rates and moral suasion. With the embrace of marketbased monetary policy and developments in Nigeria's payments system, liquidity forecasting became a crucial pre-condition for liquidity management.

Before the advent of the global financial crisis the system was always in excess position, thus, the Bank engages in predominantly managing excess liquidity at a very high cost. For instance, the cost of liquidity management increased rapidly from N50 billion in 2005 to N84 Billion in 2007. The liquidity circle being observed in Nigeria is based on substantial movements in the autonomous factors especially cash flows to the three tiers of government (federal, state and local governments) arising from monetization of oil export receipt. Government domestic tax revenues are remitted by the deposit money banks (DMBs) to the CBN. Most outflows come from NNPC DMBs

accounts within two to four days prior to the FAAC meeting. This results in a withdrawal of large quantum of liquidity. However, the release of funds to DMBs accounts of sub-national government is usually done within two days (t+2) following the last day of the monthly distribution of Statutory revenue to the three tiers of government at the Federation Allocation Account Committee (FAAC) meeting carried out at the second week of every month. The share of the Federal Government is kept with the CBN in the CRF account and thus the line Ministries, Departments and Agencies (MDAs) draw on their accounts within the month. These activities lead to large movements in the Federal government's position with the CBN, contributing to the volatility of liquidity.

The bi-weekly foreign exchange sales to banks under Wholesale Dutch Auction system (WDAS) and the weekly sales to BDCs is an integral part of liquidity management tools²⁸ that help in daily withdrawals from bank reserves. In addition, the system's demand for reserves varies daily, reflecting factors such as requirement for banks to hold additional reserves on the day of foreign exchange auction in order to pre-fund their bids. This and others are factors that are used by the forecast to arrive at the best judgment of demand for reserves by the DMBs on daily basis. The variations in both supply and demand for bank reserves lead to large movements in money market rates.

With the new Monetary Policy Framework introduced in 2006 under Monetary Targeting Framework, the operating target is Monetary Policy Rate (MPR) while the overnight interest rate of the inter-bank money market complements the broad money supply as the intermediate target. In line with the new paradigm, the

²⁸In some countries like Uganda sales is used as liquidity management instrument

focus of daily forecast is to reduce the volatility in the interest rate by bringing it closer to the MPR which is the operating instrument for the purpose of achieving intermediate target of broad money (M2) and thus, attainment of the ultimate goal which is inflation.

The present model for liquidity forecasting is based on the balance sheet approach. The CBN calculates on a daily basis the estimated level of bank reserves and the amount of the short fall/excess with respect to the level that is consistent with the Monetary Policy Rate (MPR).

3.1 Liquidity Forecasting Technique In Nigeria

In principle, three main approaches are used to forecast the different component of liquidity supply and demand, These are as follows:

- a) Accurate forecast rely largely on information exchange from relevant offices and departments of government.
- b) Time series models: this is also referred to as a theoretical model, it make use of the historical path of the variable to predict future values (AR, ARIMA).²⁹
- c) Structural models: this makes use of all relevant information that explain the variables and are formulated either as a single or multi-equation model (SARIMA)³⁰. This is usually used for monthly forecast.
- d) Judgmental estimations: this is more or less discretionary

and relies more on value judgment. Knowledge of how the economy works especially the liquidity movements is quite imperative especially in developing economy where the financial system is still not fully developed.

Generally, the time series and the structural models are based on the assumption that underlying relationships are stable. However, in the CBN the process as it is currently being practiced involves the blend of the above three approaches.

3.1.2 Liquidity Forecasting Table

The CBN is operating a forecasting table and is set up in an excel spreadsheet, which has the following main components.

i) Opening Reserves: This comprises the closing balance of the previous day plus the total errors from previous forecast. $OB_t = TR_t + Et - 1$ ³¹

ii) Currency in Circulation (CIC): Changes in currency in circulation (CIC): This refers to the changes in all notes and coins held outside the Central Bank and removed by debiting or crediting banking system's reserves as banks pay for CIC by having their reserves account with the Central Bank. Increase in CIC has a negative impact on the bank reserves and vice versa. The Forecast of CIC is carried out taking into consideration various factors namely: multiple seasonalities (trend, daily pattern, festive period, holidays and elections expenditures etc).

iii) Federal Government Operations

This is part of the autonomous factor that the CBN does not have control over. Net Government Position (NGP); this is the net change of inflow and outflow for a particular period of time. Under this heading there are three items, namely; Revenue, Expenditure and Net Financing (FGN=Rev+Exp+NF).

A) Revenue

Revenue collection is a withdrawal from the system.

The major source of the inflow comprises of the revenue from Nigeria Customs Service (NCS), Federal Inland Revenue Services (FIRS), Office of Accountant General of Federation (OAGF) Revenue and Investment. NCS revenue consists of collection for the Federation Account³² and Non-Federation Account³³ by the agency. This item has maintained a particular pattern over a period of time. Forecasting NCS revenue item is done by taking the average of previous five days. Most often, the forecast error on this item is less than 3 per cent. FIRS collection is for federation and non-federation accounts. This collection also has a particular pattern. During the second week of every month the collection tends to rise significantly. While for the monthly pattern the revenue increases from July to December. Moving average is used in forecasting this item. The forecast error is quite minimal on this item.

OAGF Revenue and Investment³⁴ is another revenue source but it is quite minimal and highly volatile. Other Revenues (OR) are

²⁹Autoregressive, and ARIMA (Autoregressive Integrated Moving Average)

³⁰SARIMA (Structural Autoregressive Integrated Moving Average)

³¹ $OB_t = TR_t + Et - 1$: OB_t = Opening Reserves forecast at the current period; TR_t = Total Forecast Reserves of the previous day; $Et - 1$ = Error of the previous day forecast

³²Federation Account is the account that belongs to the three tiers of government in Nigeria (Federal, States and Local Governments), it is a zero account that must be nil by month end, through sharing of all that is accrued into that account at that month. The FAAC Sharing is based on the revenue sharing formula of FGN, SG and LG (52.68%, 26.72% and 20.60%). Nigerian Customs Service collections and FIRS that go to federation accounts are: Imports duties, Exports duties, Capital gains tax

³³Non-federation account is an account that is strictly for the federal government (PAYE, Withholding tax etc). there are other accounts that are shared at FAAC namely VAT consolidated accounts.

³⁴OAGF Revenue and Investment is a section under that OAGF Office that collects revenues for federal government (Revenue various from surplus, refunds, and Unspent balances of MDAs).

revenues that do not fall under any of the above category of revenues. Items under this heading include privatization proceed. These collections do not follow any particular pattern. The revenue collection can be expressed as; $Rev = (FIRS Rev + NCS Rev + OAGF Rev + OR)$.

B) Expenditure

These are injections into the system through the mandates issued by the OAGF on behalf of the Ministries, Departments and Agencies (MDAs) to the CBN. These mandates cover personnel, overhead and capital payments. The Liquidity Forecasting Office (LFO) has been maintaining a close contact with the Budget Office, OAGF Funds, and Banking and Payments Department, to collect all the relevant information for that day and the expected future transactions. There has been cooperation from the agencies and they provide information to the LFO but often times some information are received late.

C) Net Financing

This is the net of Nigerian Treasury Bills (NTBs) issues and maturity for various tenors - up to 364 days. Auction is conducted bi-monthly to raise funds for the Government. NTBs issues are seen as withdrawals at discounted value. Conversely, the maturity of NTBs is taken as an injection to the system in which full face value is paid into the system. It is carried out bi-weekly with settlement of t+0. Issue calendar is followed and monitored by the LFO, therefore this item is not forecast. Other source of inflow include new issues and government bonds with the exclusion of non-competitive bonds issue with (T+2) settlement, issued by the Debt management Office. Conversely, coupon payments and bond maturities

form part of withdrawals from the system issued by the Debt Management Office.

D) FAAC / NNPC / JVC /BOI / NEXIM Payments

These are items that are exogenously determined and therefore CBN has no control over them. FAAC payments are made on monthly basis usually around 12th - 14th of every month. The States and Local Governments' share are debited to their DMBs account while that of Federal Government is posted to the Consolidated Revenue Fund (CRF) account domiciled in the CBN. Payments of the share of funds of the sub-national Government to their DMBs account constitute an injection to the system while that of FG is a movement of account it does not have immediate liquidity impact. Some times FAAC is shared along with the proceeds from Excess Crude Account³⁵. This is often monetized for government to undertake some special projects or to augment shortfalls in revenue when it falls below the budget amount³⁶. The share of the sub-national government is credited to their DMBs account at T+2.

E) NNPC funds

The NNPC funds with the DMBs are transferred to the Federation Account within the week preceding the FAAC meeting. The amount is substantial and is irregular. It is the biggest withdrawals from the DMBs being observed. Usually NNPC prepares schedule of payments on monthly basis, which specifies the dates which the DMBs are supposed to remit the NNPC funds to the Federation Account. In the case of default, CBN is expected to automatically debit the DMBs if the payments are not made. See appendix 5.

F) Joint Venture Company (JVC) Cash calls

This item is the FGN's contribution to cover funding of exploration and production, expenditure monitoring, and other operating costs of the JVCs. The money are monetized from the JVC cash call dedicated account domiciled in CBN and paid to JVCs naira account in DMBs. These large payments are made around the middle of the month, but the exact timing is uncertain. The forecast of this item is based on an average of previous three periods. It is an injection into the system. Forecasting this item is quite complex as it does not have a particular trend.

G) Bank of Industry (BOI) Fund

This is the intervention funds on Power, Aviation, SMEs, Agricultural and some other funds administered by BOI. The fund is disbursed to DMBs for onward submission to the beneficiaries. This constitutes an injection into the economy.

The disbursement is quite irregular, and equally, the information is not received on time.

H) Nigerian Exports-Imports Bank (NEXIM) Fund

This is a fund that the NEXIM uses to finance the credit in (local currency) transaction of the exporters. This is also an injection to the economy.

IV) CBN Operations

The CBN operations are divided into Foreign Exchange Summary (FES) and Domestic Summary. FES covers all the Central Bank foreign exchange transactions on behalf of government. Changes in the NFA are due to CBN interventions in the foreign exchange market. The individual items under this heading are as follows:

³⁵Excess Crude account is an account operated by the government in which amount realized in excess of the budgeted oil price benchmark is kept.

³⁶The budgeted amount is the amount that is approved in the budget to be shared at FAAC on monthly basis. It changes from year to year. If what is collected for federation account is not up to the budgeted amount, then augmentation is done to make up the amount.

CBN Operations = FES + DS
 FES = WDASs + WDAS f + BDCs + OF

A) Wholesale Dutch Auction System

Under this window, wholesale of foreign exchange is offered to banks through a biweekly auction; Monday and Wednesday for settlement T+2. The transactions under this window are spot and forward. In forecasting this item the following factors are considered: monthly foreign exchange sales by oil companies³⁷; FAAC disbursement; festive period; and the prevailing foreign exchange policy at that point in time. Moving average and judgmental factors are used in the forecast of this item. WDAS represents withdrawal from the system and therefore it carries a negative sign.

B) Bureau de change (BDC) Sales

This is sales of foreign exchange to the Bureau de Change, conducted once in a week. These transactions are settled through their DMBs Accounts and therefore have an impact on bank reserves, with settlement date of T+1. Forecasting BDCs purchases of foreign exchange is done by addition of number of the BDCs that participated, multiplied by the amount at any point in time. However, when some of the BDCs do not participate an averaging method is adopted.

V) The Domestic Summary

This comprises of the net position of OMO auctions and maturity, Repos and Reverse Repos, SLF, repayment, two way quotes. These items are not forecast in the Liquidity Forecasting Table.

VI) Total Reserves Pre-OMO

A) Demand for Reserves: This consists of those excess reserves held for meeting daily obligations by the DMBs. It is established that balance sheet data are not

sufficient to indicate whether a bank has a free or excess reserves, thus, the liquidity forecaster needs to know what the RR target levels are. With the introduction of reserve averaging in March 2011, it is necessary to differentiate between free balances that can be used by DMBs freely on a given day and what is actually free for the maintenance period as a whole that the DMBs can use. In the CBN, forecasters take into consideration, in addition to the above factors other expected precautionary motives for demand for reserves by DMBs and comes up with the best judgment on a daily basis.

Figure 1 above shows that in Nigeria, the daily demand and supply of excess reserves determines the interbank rate on that day. This contrasts with the situation where compliance with a reserve requirement is permissible on average over the maintenance period. In this circumstance, supply and demand can be balanced over a longer timeframe, thereby reducing the interest rate impact of forecasting errors on any particular day. By allowing averaging, volatility in the interbank rate is reduced.

$$TR \text{ Pre-OMO} = OB + \Delta CIC + FGNO + NOT$$

Where OB = Opening Balance; ΔCIC = Changes in Currency in Circulation; FGNO = Federal Government Operation; and NOT = Net of Other Transactions: (FAAC payments, NNPC withdrawals, Joint Venture Cash calls monetization; Bank of Industry intervention funds).

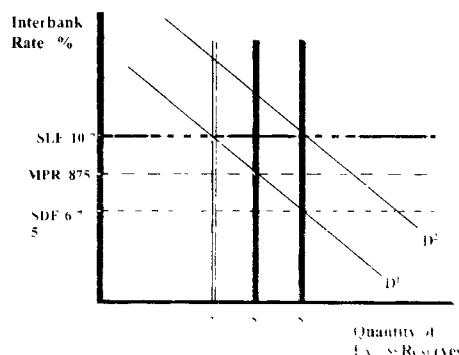
a) Cash Reserve Requirements (CRR)

CRR is a statutory reserves that DMBs are expected to hold against specified deposit liabilities for a particular maintenance period. This item is not forecast as the CRR is a function of total deposit liability of the DMBs. The CRR maintenance period in Nigeria ranges from four to five weeks.

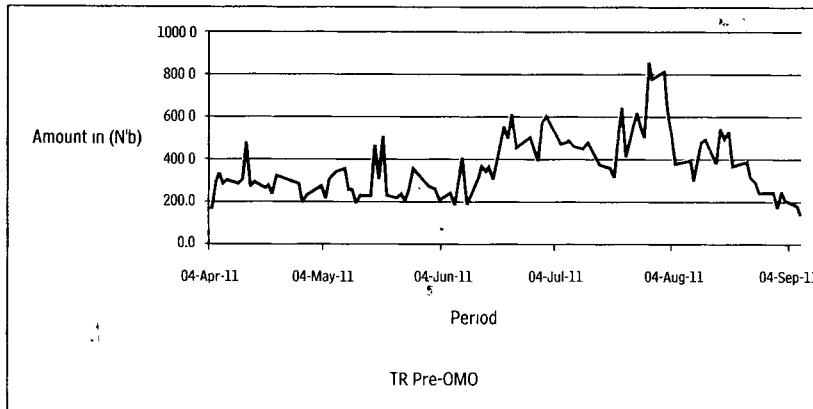
b) Daily Excess Reserves

This is made up of the Total Reserves pre-OMO less CRR. Usually, apart from the CRR, the DMBs keep certain amount for precautionary purposes to meet its daily needs and any amount above that is regarded as excess reserves. Excess reserves forecast are the focal point of liquidity forecasting. The demand and

Figure 1: Supply and Demand for Excess Reserves



³⁷This is the sales of forex by oil companies to meet their domestic obligations (related to the joint venture agreements). This sale comes up in the second or third week of the month. The demand at the WDAS window is daily, but it is higher in the week when oil companies make their sales to DMBs.

Figure 2: Total Reserves Pre-OMO

supply for the excess reserves is what determines the price of the liquidity in the system and therefore give an insight to the direction and future movements in the price (rates). If the nominal value of the excess reserves position carries negative, it means there is shortage in the system and vice-versa.

c) Demand for Reserve Consistent with the MPR

The DMBs demand for reserves changes over time. Under the current Monetary Policy Framework, "Monetary Policy Rate" (MPR), otherwise called the "Operating Target" rate, serve as an indicative rate for transactions in the inter-bank money market as well as other DMBs' interest rates. The main operating principle of the new framework is to control the supply of settlement balances of banks and motivate the banking system to target zero balances at CBN, through an active inter-bank trading or transfer of balances at CBN. The MPR is set and reviewed from time to time in line with the current and expected inflation rate and general economic and financial conditions.

Analysis of Liquidity Forecasting Performance

The variance table serves as an evaluation table of the performance of the forecast on the previous day and the exact date when the transaction will take place. In the table all the

items are summarized, showing the actual figures against the forecast of that day. The summary of error breakdown captures the error pre-CBN operation and the unexplained error, see Appendix 8

4.0 Challenges and Recommendations

4.1) Challenges

The key challenges confronting effective conduct of liquidity forecasting in Nigeria include the following:

- a) Timely access to all relevant data, particularly the ones from external customers.
- b) Government operations that come abruptly in form of urgent mandates to be paid same day without enough information to the LFO or even the BPD do undermine the forecast.
- c) Lack of forward looking information from the agencies that supply the data for the forecast. Although FLAC provides useful information to the liquidity forecasting process. However, bulk of the data are historical that do not assist much in the forecast particularly data of irregular payments.
- d) Lack of proper model to capture the demand for reserve appropriately does affect the process. Currently, the best

judgment is used to arrive at the expected demand for reserves for the DMBs on daily basis.

e) Lack of developed payments and accounting system in the economy affects the smooth flow of information as well as its accuracy.

f) Although the LFO track the mandates from OAGF to the final posting in the CBN, however, there are cases where, some mandates come abruptly that the adequate notice is not given to the LFO and as such cause a wide variation.

g) The NNPC payment dates are usually not known as banks have discretion of when to pay.

4.2) Recommendations

i) A new posting procedure for the mandates needs to be introduced. The CBN need to inform Funds Office of the Office of the Accountant of General of the Federation that all mandates received by 4 p.m would be posted at t+1, while those received after 4 p.m would be treated as t+2. If this procedure is implemented and followed vigorously, the issue of late information would be tackled, thereby reducing the wide variations due to lack of timely information.

ii) The strict adherence to the posting procedure of T+2 for FAAC funds will help tremendously in reducing the occurrence of spike in the forecast due to the non compliance with the procedure.

iii) There is need to ensure that all large payments or withdrawals by the CBN to the DMBs accounts be done in the morning before 10 a.m by doing that, it would assist

iv) The DMBs know their position on time and reduce the volatility of rates at the interbank market.

v) All attendees of the FLAC

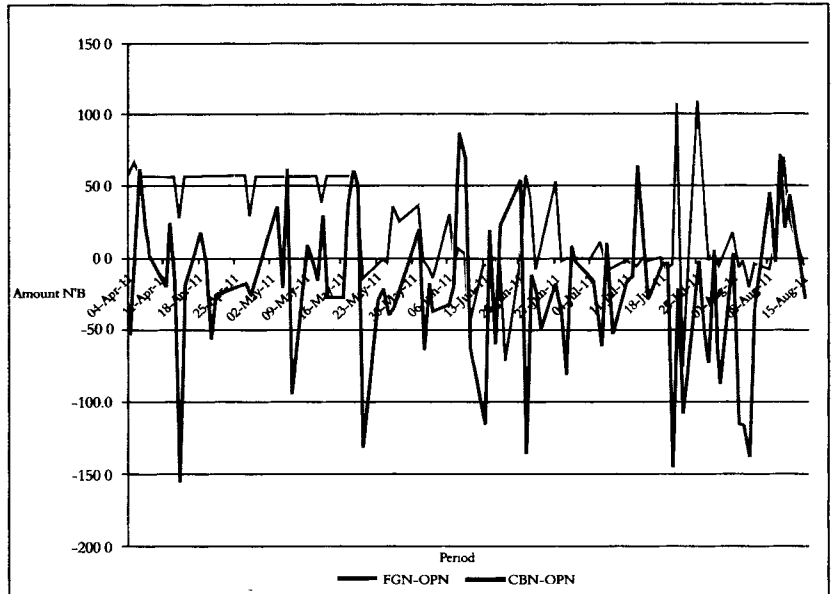
meeting should be made to provide a forecast of their organization's operations, covering the same agreed time period for the coming week, as well as information on outcomes from the previous week with an explanation for any variance observed against the forecast from the previous week. This should lead to a clearer appreciation of the objective of the FLAC meeting.

5.0 Conclusion

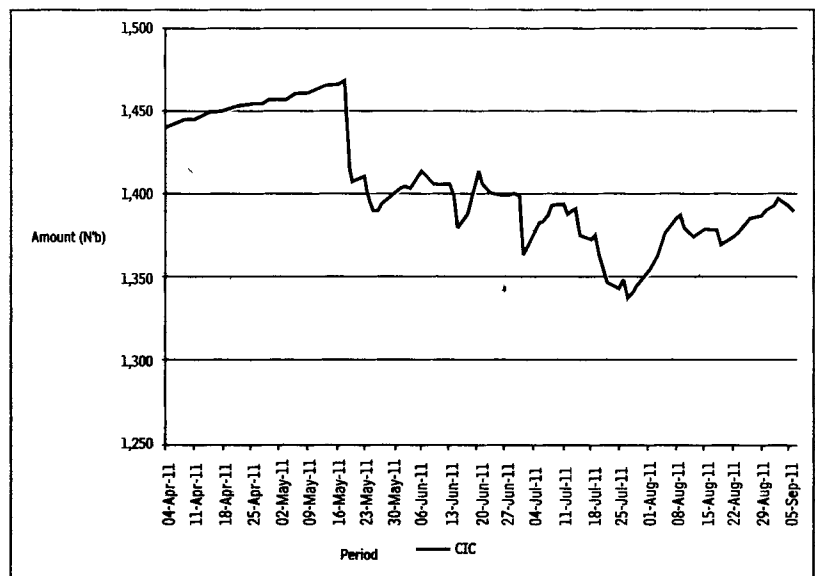
The paper explained the conduct of daily liquidity forecasting in Nigeria. The use of spreadsheet, time series model and judgmental factors are employed in forecasting banking system liquidity. The forecasting technique is providing a good guide on the liquidity path. However, the forecast is faced with some challenges ranging from timely data, lack of forward looking information from relevant data sources agencies. It pointed out the need for proper and timely submission of data to the office on daily basis or as and when due.

With the reorganization of the Liquidity Forecasting Team, a tremendous improvement has been achieved in terms of the forecast accuracy. The movement of technical staff from the Monetary Policy Department (MPD) to the Financial Markets Division (FMD) have contributed to a better result.

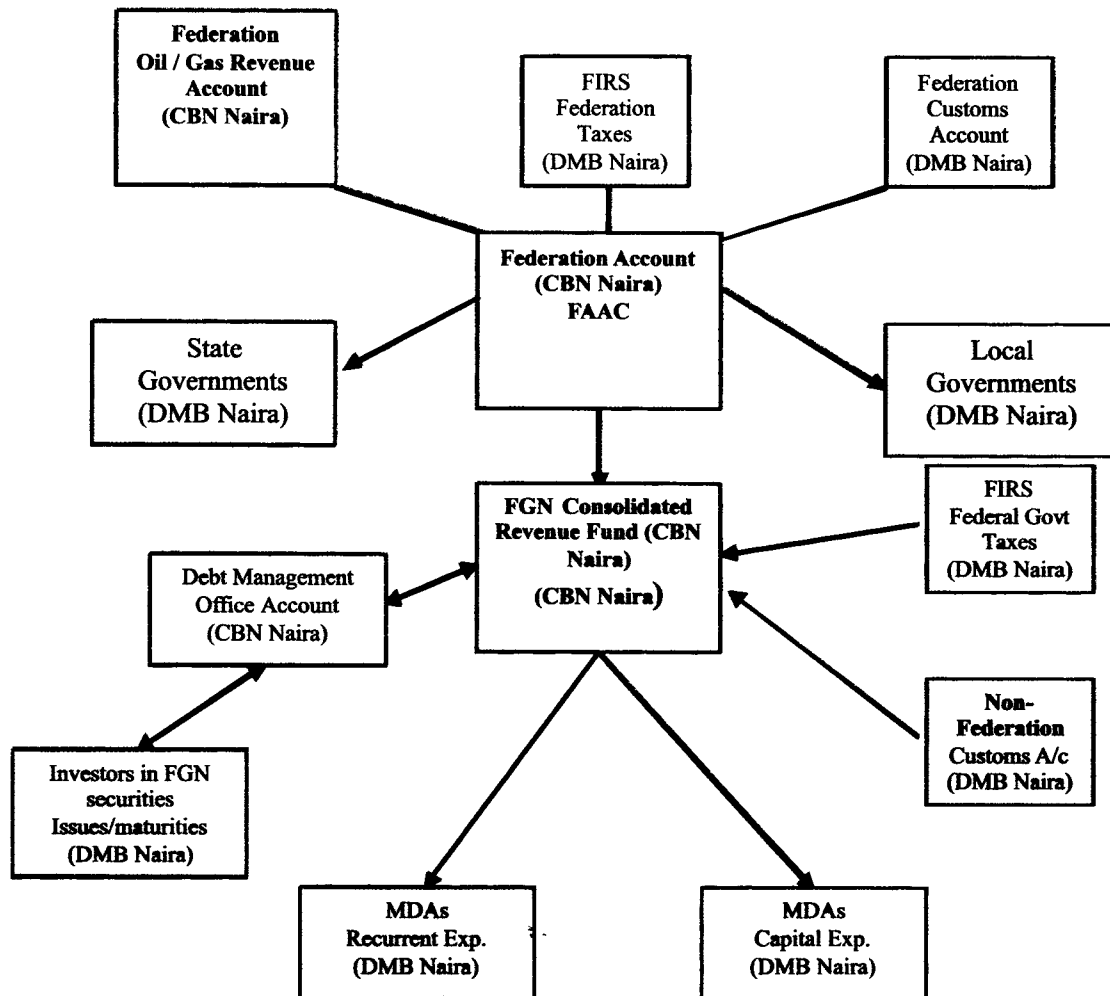
Appendix 1: Net Government Operations and Net CBN operations



Appendix 2: Currency in Circulation April August 2011



Appendix 3: Federation and Federal Government Institutional Arrangements



Source: Daryll paper on frame-work of monetary policy

BIBLIOGRAPHY

- Daryll, King, (2011). "Liquidity Forecasting Framework" Paper submitted to Financial Markets Departments, Central Bank Of Nigeria, September.
- Zubair, A. (2008). "Liquidity Management and Forecasting in Nigeria" Paper presented at the Liquidity Forecasting course organized by Centre for Central Banking Studies (CCBS), Bank of England, London, September.
- Gray, Simon, (2007). "Liquidity Forecasting" A paper presented at the Seminar on Liquidity Forecasting for the Monetary Policy Department at the Chelsea Hotel, Abuja.
- Bank of Jamaica (2005). "Standards of Sound Business Practices Liquidity Management".
- Reserve Bank of India (2002). "Short Term Liquidity Forecasting Model for India" Mumbai.
- IMF (2000). Monetary and Financial Statistics Manual, IMF Publication Services, Washington, D. C.