EXCESS LIQUIDITY IN NIGERIA'S ECONOMY: A CLOG ON EFFICIENT MONETARY POLICY IMPLEMENTATION

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Abstract
The Study Sets Out To Investigate The Contributory Factors To The Preponderance Of Excess Liquidity As Well As The Effect Of Excess Liquidity Phenomenon On Nigeria's Economic Performance. Relevant Secondary Data Are Sourced From The Central Bank Of Nigeria's Statistical Bulletin. The Auto Regressive Distributed Lag (Ardl), Was Employed To Carry Out Econometric Analyses. The Findings Reveal That That All The Variables Except Private Sector Credit Account For The Presence Of Excess Liquidity. One Major Inference To Be Drawn From The Findings Therefore Is That Nigerian Economy Is Riddled With Lots Of Cash Outside The Banking System Which Are Poorly Utilized For Productive Activities. We Thus Recommend Among Others That The Authorities Should Fashion Out More Effective And Efficient Way Of Curtailing The Huge Amount Of Cash That Reside In The Hands Of The Non-Banking Public. It Is Imperative And Instructive Too That The Monetary Authority Should Sustain Its Current Contractionary Monetary Policy Stance To Mop Up Excess Cash In The Domestic Economy.
Keywords: Excess Liquidity, Foreign Exchange, Money Supply, Auto Regressive Distributed Lag (Ardl)

Introduction

Liquidity is generally understood as the ease of spending, and this is usually predicated on the availability of money. The sole authority to issue money in Nigeria is vested in the government and this is delegated to the monetary authority - Central Bank of Nigeria (CBN). The CBN undertakes the duty of ensuring that the economy is supplied with the right amount or quantity of money in line with the projected level of economic activity. Accordingly, it is expected of the CBN to ensure that it maintains equilibrium between the liquidity needs of the economy with its supply. Excess liquidity becomes an issue when there is disequilibrium between the amount of money supplied and demanded in the economy, which implies that more money has been issued than available goods and services with the resultant implications for inflation (Nyong, 2001, Bakare, 2011).

It is important to delineate micro-liquidity from macro-liquidity in order to situate the study in its proper context. Liquidity at the micro level draws from as well as reinforces or diminishes liquidity at the macro level. Thus, liquidity at macro level which forms the locus of this study refers to the overall monetary conditions of the economy (CBN 2011). Financial crisis which arises from the weakening of the financial system is often caused by over extension of credit by financial intermediaries and the inability of debtors to redeem their obligations. This thesis has the effect of constraining banks and other financial institutions from carrying out their normal functions of funds mobilization and credit extension. If the tendency for banks to curtail credit operations in the economy is allowed to persist, the entire economy may be caught up in a web of illiquidity which could trigger a recession or worse still a depression due to its potential influence on the level of effective demand for goods and services and the resultant inventory buildup that may lead to retrenchment by firms and the concomitant unemployment. Deficit policy which aims at stimulating economic activities during a downturn or better still forestalling it, is a way of re-inflating an economy and thereby beef-up liquidity Onwe (2014),

Eze and Nwambeke (2014), Adam and Bevan (2004). Because of the adverse consequences of illiquidity monetary policymakers try to avoid it as a plague by pursuing expansionary monetary policy rather than contraction. This naturally raises concerns about excess liquidity.

The phenomenon of excess liquidity which majorly results from large amount of money residing in the hands of economic units outside the banking system has continued to be of concern as it stands to distort efficient workings of the economy. From the data published by the CBN, the growths in monetary aggregates and resultant inflationary pressure without commensurate growth in output have become so visible and a source of concern. The outcomes in monetary aggregates from 2006 to 2014 were 43.09, 44.24, 57.78, 27.60, 6.91, 15.43, 26.39, 21.32 and 20.64 as against the targeted level of 27.00, 24.10, 35.00, 20.80, 29.25, 13.75, 24.64, 15.20 and 14.50 respectively. In the same vein, the Targeted Inflation rates during the same period were 8.5, 6.6, 9.00, 8.20, 11.20, 12.00, 9.50, 9.90 and 7.50 as against the Actual level of 9.0, 9.0, 15.10, 13.90, 11.20, 12.00, 12.00, 9.90 and 8.00 respectively. During the same period, the Actual GDP growth rates were 6.03, 6.45, 5.98, 6.96, 7.98, 5.31, 4.21, 5.49 and 6.22. This is also against the targeted rates of 7.00, 10.00, 10.00, 8.90, 6.10, 7.40, 7.30, 6.44 and 7.22 (CBN, 2014). From the figures above, it is seen that in the 9 years observed, only 2010 witnessed actual GDP growth rates above the targeted. This could be explained by the reduction in the Inflation as a result of sharp decline in growth in monetary aggregates during the same period.

To this end, the pertinent questions that arise include the following: giving the peculiar structure and nature of Nigeria's economy, what factors really account for excess liquidity? To what extents do the individual variables account to the prevalence contribution of each of these variables to the prevalence of surge in the liquidity condition of the economy? Given the fact that the very nature of the phenomenon of excess liquidity and its various determinants are highly dynamic, In the light of this fact and giving recent developments, could the results be same especially when quarterly data are

utilized? Why does it appear that Nigeria's economy is witnessing cash crunch and apparent illiquidity in the presence of surge in monetary aggregate with attendant upward movement in interest rates in the economy? These questions and more are what this study set out to answer and they form the crux of the study.

Theoretical Framework and Empirical Literature
The theoretical foundation of this study stems from the different fundamental theories that address the issue of money supply and its utilization for economic activities. These theories range from the Quantity theory of money by Irving fisher to more modern Active Passive Money View Theory on which this study is based.

The proponents of active-money view posit that the quantity of money available for desired level of economic activities is dependent on the sole influence and authority of the monetary authority (the central bank). Consequent upon the direction and intent of this influence by the central bank, the situation arises where a real quantity of money holdings that is larger that is desired by the economic units obtains. Therefore, an attempt to eliminate these excess balances which have now translated into excess liquidity in the economy is considered to have a key function in the effective monetary policy transmission (Laidler, 1999, Englama & Ogunleye, 2009). In contrast to the active money view, the proponents of the passive view hold that quantity of money available for desired level of economic activities is not dependent on the sole influence of the monetary authority but include other sources that the authority may not have direct influence on. This leads to a monetary variation which results from a variation in the money demand caused by a variation in output.

The reasons for the upsurge in liquidity in the economy have been attributed to monetization of oil proceeds, fiscal deficit operation of the federal government among others (CBN 2005, 2014). Other authors such as Ariyo (2015), Boyo and Ojomaikre (2002), Englama and Ogunleye (2009), Kim (2001), Holman and Neumann (2002), Bruggeman, et al. (2005), Canova (2005) have also looked into the phenomenon of surge in liquidity prevalence and its

consequence in economic stability and general performance.

Ariyo (2015) notes that in spite of the existence and activities of relevant intermediation institutions and financial sector regulatory agencies, excess liquidity has become persistent macroeconomic 'headache' for Nigeria over the years. In the research work, the author observes that that the limited capacity of the economy to absorb the huge resources inflows accruing from the petroleum industry accounts the overriding cause of the problem. Further, Ariyo (2015) contends that while fiscal operation of government also constitutes an overriding cause of the liquidity problem in the country, domestic credit from the banks to the public sector is another major cause. Following the same line of arguments, Boyo and Ojomaikre (2002) explain that the problem of excess liquidity in Nigeria's economy is attributable mostly to the traditional sharing of proceeds from federation account which is largely irregular, unpredictable and often times bloated no thanks to defective foreign exchange rate system.

Englama and Ogunleye (2009) investigate the response of gross domestic product, exchange rates and interest rates to deviations from excess liquidity in Nigeria. Utilizing the econometric model of Vector autoregression (VAR), the results reveal according to expectation the detrimental effect of excess liquidity on output. Also, a decline in exchange rates and reduction in rate of interest occur owing to excess liquidity during the period of study. The implication of the results is that speculators take advantage of excess monetary expansion and this causes further depreciation in exchange rate value in the economy. In an earlier study, Aryeetey and Nissanke (1998) highlight the challenges and dilemma faced by the monetary authority owing to surge in liquidity in the economy. The authors decry the difficulty in regulating and managing money supply where excess liquidity prevails in the economy. Consequently therefore, realization of macroeconomic objectives of increase in employment rate, higher growth rate of GDP, low inflation rate etc is ultimately challenged.

Following the same line of argument, Bathaluddin, Nur and Wahyu (2012), Agenor and El Aynaoui (2010) posit that the prevalence of excess liquidity presents enormous challenge to the monetary authority particularly in its statutory monetary policy conduct and macroeconomic management as a whole. The authors unanimously agree that the problem that arises as a result of surge in the economy's liquidity undermines the efficiency of monetary policy transmission. Giving this precarious situation, the actualization of macroeconomic goals and objectives consequently appears increasingly difficult.

Other authors also highlight the implication of the uncontrolled surge economy's liquidity in one country to another country. Kim (2011) argues that deviations that result from liberal monetary Policy causes expansion in economic activities. The study is based on the expansion of the liquidity position of the US economy. In the same vein, Holman and Neumann (2002) analyze the transmission of monetary deviations between the developed economies. Their findings reveal that a surge in the monetary condition in one country leads to an insignificant contraction in monetary condition in the neighbour country. Bruggeman, S. W., Valk-Lingbeek, M. E., van der Stoop, P. P., Jacobs, J. J., Kieboom, K., Tanger, E., ... and van Lohuizen, M. (2005) note that a direct deviations in the monetary determinants brings about rise in prices in the euro areas, domestic production and in the broad money supply. Further, Canova (2005) observes that deviations in liquidity conditions in the US economy have significant influence on economic development. The author finds the rate of interest tends to go up thereby enhancing inflows of capital and boosting aggregate demand. According to the study, this scenario occurs after monetary policy contraction.

From the foregoing, the authors unanimously agree that prevalence of excess liquidity is detrimental to the overall working of the economy and its containment by the monetary authority is deemed extremely important, if the stated macroeconomic goals and objectives would be realized. Again, various factors have also been found to be the major causes of excess liquidity. However, despite the concern raised by different authors concerning the challenges posed by excess

liquidity, there still remain variations among authors concerning the specific determinant variables that are responsible for the prevalence of surge in liquidity condition of the economy in the Nigerian context. This forms the crux of this paper.

Materials and Methods

To ensure clarity, this section has been further divided into subsections as presented below:

Data for the Study

The study utilizes quarterly data from 1981 to 2016 and this to be too large and therefore presenting them in the paper looks clumsy.

Tests for Stationarity

Stationarity or Unit root tests seek to evaluate the stationarity properties of the time series variables employed as both a necessary and pre-condition for estimating the co-integration equations. In this study, the Augmented Dicker-Fuller (ADF) tests are employed to confirm; (a) stationarity of the time series data employed, (b) avoid spurious estimates as a consequence of (a) above and (c) confirm the order of integration of the time series variables. The decision rule is that the absolute values of the ADF-statistics should be higher than those of the Test Critical Values at 1%, 5% and 10% levels of significance for all the study variables employed. Thus, the ADF is applied to the model

$$\Delta y_t = \varphi y_{t-1} + \sum_{i=1}^{p} \alpha_i \, \Delta y_{t-i} + u_t \tag{3.25}$$

Where

α is a constant, φ the coefficient on a time trend and p the lag order of the autoregressive process.

Auto Regressive Distributed Lag (ARDL)

It is worthy of note that if the variables are not integrated of the same order which is a necessary condition for cointegration test using Johansen approach, we adopt the econometric model of Auto Regressive Distributed Lag (ARDL), which is utilized when the variables of study that are not integrated at the same order and also show no evidence of cointegration using Johansen technique.

Empirical Model Specification

The functional relationship between Excess liquidity and the determinant factors is written as follows:

$$EXL = f(COB, CPS, DF, MR, OG, INCL)$$

Where:

EXL = Excess Liquidity
COB = Currency outside the Banking System
CPS = Credit to the Private Sector
DF = Deficit Finance
MR = Monetization of Reserves
OG = Output Gap
INCL = Financial Inclusion

For our study, the model is then fitted as follows

$$EXL_t = \gamma_0 + \gamma_1 CC_t + \gamma_2 CPS_t + \gamma_3 DF_t + \gamma_4 MR_t + \gamma_5 OG_t + \gamma_6 INCL_t + EXL_{t-1} + u_t \tag{3.15}$$

Theoretical Nexus of the Model

According to the theoretical foundation observed earlier which includes Quantity Theory of Money Demand particularly the Transactions Equations of Exchange and Active Passive Money View Theories, long term equilibrium is assumed in which actual real money balances $(M/P_a{}^*)$ are equal to desired real money balances $(M/P_d{}^*)$ i.e.

$M/P_a{}^* = M/P_d{}^*$ (3.1)

M stands for the average supply of money in a period. **P***stands for the average price level.
Through the injection of additional money the long-run equilibrium is distorted. Thus, the actual money balances now exceed the desired real money balances such that;

$M/P_a{}^* > M/P_d{}^*$(3.2)

In the situation above, economic units actually hold more real balances than desired; this situation gives rise to surge in liquidity situation of

the economy. According to reviewed literature, the scenario above is as a result of a number of factors, which the study is set to examine. These factors as included in the Model are Currency outside the banking system, Monetization of Foreign Reserves, Banking System's credit to the private sector, Federal Government Deficit Financing, Output gap, Level of financial inclusion. Briefly stated below is how these factors could engender excess liquidity:

Currency outside the banking system (β_1):

Currency outside the banking system is the actual money used by economic agents to conduct business transactions. This money is in the hands of the economic units rather than stored in any bank of financial institution. When the stock of money and monetary resources outside the banking system exceeds the level needed for productive economic activities, economic agents are left with stock of idle money that are subsequently channeled to consumption, thereby causing excess liquidity in the economy.

Domestic Credit to the Private Sector (β_2):

In active economies, the private sector drives productive economic activities. Domestic *credit to private sector* comprises loans and advances extended to the *private sector* by the banking system. However as a result of adverse selection issue, the credit extended end up not being utilized for the reason it was meant. Rather they are channeled to consumption which fuel excess liquidity in the economy.

Deficit Financing (β_3):

Closely related to the above scenario is the federal government deficit financing which is used for recurrent expenditure rather than capital expenditure. This therefore contributes to the surge in liquidity in the economy as also acknowledged by the CBN.

Monetization of Foreign Reserves (β_4):

Monetization of Foreign Reserves is a major source of additional money to the economy (CBN Annual Reports). Monetization of foreign assets to finance deficit gaps of government enlarges the banking system's deposit base, as fresh funds are injected by the central bank. Such funds provide the deposit money banks with a larger base for credit creation. The consequence of this action is a rise in the level of money supply in the economy which exceeds demand of such for productive economy activities; hence, the end result is excess liquidity in the economy.

Output Gap (β_5):

The output gap gives insight into the level of economic activities in the country. It indicates the actual level of output generation in the country against the potential capacity of the economy. Thus, the difference between the potential output and the actual output gives the output gap of the economy.
When the absorptive capacity of the economy is low (a case of negative output gap), the level of money supply exceeds to a significant level to level of output generation. This translates into prevalence of excess liquidity in the economy.

Level of Financial Inclusion (β_6):

Financial inclusion refers to a process that ensures the ease of access, availability and usage of the formal financial system by all members of an economy (Onaolapo, 2015). When the level of financial inclusion of a country is low, the resultant effect is that more money than is needed will reside in the hands of the non-bank public. The monetary authority therefore has to resort in printing more money to meet the productive needs of the economy. This action will mean injection of more funds into the economy and ultimately will translate into excess liquidity in the economy. Thus we expect a negative relationship with excess liquidity and a positive relationship with gross domestic product.

A priori Expectations

Having established the theoretical relationship and linkage, we expect a positive relationship between the selected variables and excess liquidity except for level of financial inclusion which a negative relationship is expected. Thus;
$\beta_1\,\beta_2\beta_3\beta_4\beta_5 > 0$ and $\beta_6 < 0$

Where;

$\beta_1\,\beta_2\beta_3\beta_4\beta_5 > 0$ and $\beta_6 < 0$ represent the coefficients values of variables included in the study (currency outside the banking system, fiscal deficit

finance, monetization of reserves, credit to the private sector, output gap, level of financial inclusion).

Presentation of Empirical Results
Descriptive Statistics

Table 4.1 reports some summary statistics that describe the distributional properties of the study variables. The statistics reported include mean, maximum, minimum, standard deviation, skewness and kurtosis. The table also shows the normality test based on Jarque and Bera (1981).

Stat	EXLQ	COB	CPS	CGS	MR	GDP_GAP	FICL
Mean	-655.6	462563.2	3506200.	71758.7	565359.7	34493.8	59061.9
Max	9220.6	1857942.	18897310	514017.7	2309144.	5157789.	970841.8
Min	-89788.1	3995.3	10053.1	-14800.4	1754.2	-6469604.	34.0
SD	7967.	558224.	5702536.	108663.5	688423.0	1465133.	190187.8
Skew	-10.4	1.07	1.5	1.7	0.9	-0.4	3.8
Kurt	117.1	2.7	3.9	5.0	2.5	10.6	16.5
JB	76374.6	26.3	60.6	88.9	22.7	340.2	1373.9
Prob.	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: EViews output

The descriptive results in table 4.1 show that excess liquidity (EXLQ) has an average value of -655.6millions, reaching a maximum level of 9220.6million and a minimum level of -89788.1million over the sample period. For the distribution of the data, the results indicate that Excess liquidity has a negatively skewed and leptokurtic distribution, with the values of skewness and kurtosis coefficients being -10.4 and 117.1 respectively. This indicates that the data is not normally distributed, as for a normal distribution, the skewness and kurtosis coefficients should be 0 and 3 respectively. Further, the Jarque-Bera statistic is substantially large with zero probability, indicating that the test of normality is highly significant. The null hypothesis of normal distribution is therefore rejected at 1% level of significance. Thus, we conclude that the data for excess liquidity is not normally distributed and the non-normality of the data is caused by negative skewness and excess kurtosis.

Similarly, the data for both output gap (GDP_GAP) and exchange rate (EXR) have a negatively skewed distribution, with a skewness coefficients of -0.4 each. On the contrary, the data for GDP (GDP), interest rate (INT), financial inclusion (FICL), monetization of reserves (MR),credit to government (CGS), credit to private sector (CPS) and currency outside the banking sector (COB) all have positively skewed distribution, with positive skewness coefficients. However, while COB and MR each has a kurtosis coefficient that is lower than 3 (platykurtic distribution), the rest of the data series have a kurtosis coefficient that is above 3 (leptokurtic distribution). This indicates that none of them is normally distributed. The Jarque-Bera test also confirms that none of these data series has a normal distribution, with the test statistic for each of them being associated with a zero probability, leading us to strongly reject the null hypothesis of normal distribution.

Overall, the huge difference between the maximum and minimum values for each data series suggests the presence of outliers in the all the data series, which are most likely to affect the results. Thus, the influence of these outliers must be minimized for any meaningful results in the main analysis.

Unit root/Nonstationarity Test

Tables 4.2 and 4.3 shows the Augmented Dickey-Fuller (ADF) unit root/nonstationarity test results for the study variables. To determine the data generating process (DGP) for each data series, we perform the ADF test on the three random walk models; (1) pure random walk (2) random walk with drift and (3), random walk with drift and trend.

Further, to determine the order of integration for each data series, we applied the test on both the level series and the first differenced series.

Table 4.2: ADF unit root test results

Variables	ADF-statistic	Test Critical Values	Order of Integration	Probability
LEXLQ	-3.757504	1% level = -3.477835 5% level = -2.882279 10% level = -2577908	I(0)	0.0042
LGDP	-11.81689	1% level = -4.023975 5% level = -3.441777 10% level = -3.145474	I(1)	0.0000
LGDP_GAP	-8.983803	1% level = -4.024935 5% level = -3.442238 10% level = -3.145744	I(1)	0.0000
LCPS	-11.48802	1% level = -3.476805 5% level = -2.881830 10% level = -2.577668	I(1)	0.0000
LCOB	-3.675563	1% level = -3.479281 5% level = -2.882910 10% level = -2.578244	I(1)	0.0009
LMR	-13.22053	1% level = -3.476805 5% level = -2.881830 10% level = -2.577668	I(1)	0.0000
LCGS	-3.884087	1% level = -3.480818 5% level = -2.883579 10% level = -2.578601	I(1)	0.0499
LFICL	-7.271528	1% level = -3.480818 5% level = -2.883579 10% level = -2.578601	I(1)	0.0000
LINT	-10.88904	1% level = -3.476805 5% level = -2.881830 10% level = -2.577668	I(1)	0.0000

LEXR	-11.82850	1% level = -3.476805 5% level = -2.881830 10% level = -2.577668	I(1)	0.0000

Source: EViews output

The results in table 4.2 indicate that none of the data series is generated by a pure random walk process. The data for LEXLQ, LCOB and LINT are generated by a random walk with drift process while the data for LRGDP, LGDP_GAP, LCPS, LMR, LCGS and LEXR by a random walk with drift and trend process. The data for LFICL is characterized by both random walk with drift and random walk with drift and trend processes. For the test at level data, we can see from the results that, except for LEXLQ and LGDP_GAP, all variables have a p-value that is above all conventional levels (p > 0.1), indicating that they are not significant. The p-values for LEXLQ and LGDP_GAP are 0.0042 and 0.0631 respectively, indicating that the ADF test is significant for both variables. Thus, only both variables are stationary at level. However, while the unit root hypothesis is rejected at 1% level of significance for LEXLQ, it is rejected at 10% level of significance for LGDP_GAP. For the test at first difference data, the results are all similar, with the test statistic for most of the variables having a p-value that is almost zero. This indicates the test is highly significant. The p-value for each of LCOB and LCGS is above 5% but below 10% (0.0809 and 0.0702), indicating that the test is significant at 10% level. On balance, the results suggest that apart from LEXLQ which is stationary at level or I(0), all other variables are differenced stationary at I(1).

Estimation of the ARDL Model

First, to determine the appropriate lag length for a parsimonious model for excess liquidity, we fit an ARDL model which incorporates 6 independent variables (LCPS, LCGS, LCOB, LMR, LGDP_GAP and LFICL), a constant and a linear trend, using an automatic lag selection procedure based on the Schwarz information criterion (SIC), with a maximum lag of 6 for both dependent and independent variables. Here, the SIC evaluates a total of 705894 models to select the best model for the dynamic relationships being investigated. Figure 2 graphically shows the model selection summary for 20 top ARDL models for excess liquidity.
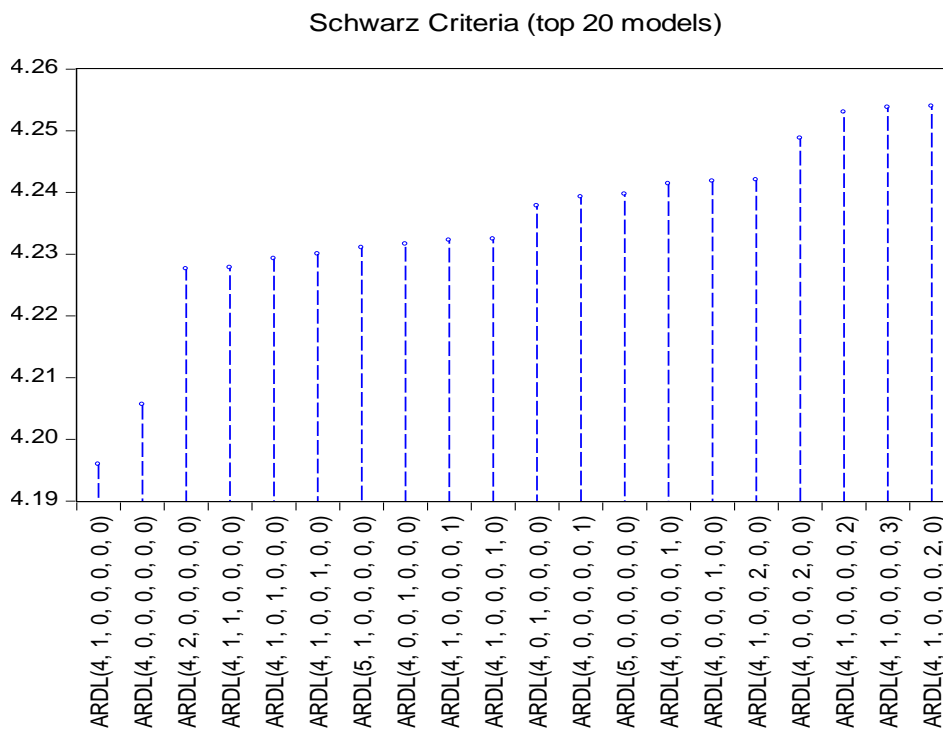
Schwarz Criteria (top 20 models)

Figure 4.2: Model selection summary for 20 top ARDL models

From figure 4.2, out of the top 20 models, the model with the lowest information (shortest line) is an ARDL (4, 1, 0, 0, 0, 0, 0) as indicated by the criteria graph. This implies that, in addition to the levels of the independent variables, 4 lags of LEXLQ and 1 lag of LCPS should be included in our ARDL specification for excess liquidity. Further, as can be observed from figure 2, almost all the models (18 out the 20 top models) use four lags of excess liquidity. Therefore, the included variables are expected to have significant effect on the current excess liquidity.

Second, we estimate the preferred ARDL model (that is, a model that includes all the levels of independent variables, a constant and linear trend, four lags of LEXLQ and one lag of LCPS), using the Newey-West HAC standard errors and covariance that correct for both heteroskedasticity and autocorrelation. The results are reported in table 4.3.

Table 4.3: Estimation results for ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LEXLQ (-1)	0.250958	0.059470	-4.219928	0.0000
LEXLQ (-2)	-0.223673	0.064259	-3.480800	0.0007
LEXLQ (-3)	-0.165859	0.052610	-3.152616	0.0020
LEXLQ (-4)	-0.338327	0.095478	3.543517	0.0006
LCPS	3.584139	2.518558	1.423092	0.1573
LCPS (-1)	-4.569893	2.558593	-1.786096	0.0766

LCOB	1.261929	0.387213	3.259010	0.0014
LCGS	0.843362	0.331553	2.543672	0.0122
LMR	0.765850	0.326840	2.343193	0.0207
LFICL	0.371176	0.155010	2.394525	0.0182
LGDP_GAP	-0.207364	0.113297	-1.830267	0.0497
C	-7.991519	7.086753	-1.127670	0.2617
@TREND	-0.085152	0.050749	-1.677901	0.0959
R-squared	0.589968		Durbin Watson stat. 2.019610	
Adjusted R-squared	0.529964		F-statistic (p-value) 6.499114 (0.0000)	

Source: EViews output

As the results in table 4.3 indicate, the five additional variables; namely, LEXLQ (-1), LEXLQ (-2), LEXLQ (-3), LEXLQ (-4) and LCPS (-1), are all significant, implying that they are important explanatory variables for excess liquidity. However, while the coefficients of LEXLQ at all lags are individually significant at 1% level, the coefficient on LCPS (-1) is significant only at 10% level. This is consistent with the model selection results in figure 2 above. The results also indicate that all the regressors, except for LCPS and the constant term, are individually significant, with LEXLQ (-2), LEXLQ (-3), LEXLQ (-4), LCPS (-1) and LGDP_GAP each having a negative coefficient. This implies that they are individually negatively related to LEXLQ. By contrast, LCPS, LCOB, LCGS, LMR and LFIC all have a positive coefficient, implying that each of them has a positive relationship with LEXLQ. Also, LGDP_GAP and the trend term are both individually significant only at 5% and 10% level respectively (i.e. $0.05 < p < 0.1$ for the trend term).

In terms of the magnitude of the relationship as represented by the individual coefficient values, LCOB has the highest positive coefficient at 1.261929, followed by LCGS at 0.843362, and LMR, LFICL and LEXLQ (-1) at 0.765850, 0.371176 and 0.338327 respectively. On the other hand, LEXLQ (-

3) has the highest negative coefficient at -0.165859, followed by LGDP_GAP at -0.207364, and LEXLQ (-2), LEXLQ (-4) and LCPS (-1) at -0.223673, -0.250958 and -4.569893 respectively.

In terms of goodness of fit, table 4.3 reveals that the model has a good fit, with the adjusted R-squared indicating that approximately 53% of the total variation in LEXLQ is accounted for by the joint influence of all the explanatory variables in the model. This implies that approximately 47% of the total variation in LEXLQ is caused by factors outside the model. The F-statistic has a p-value that is almost zero, indicating that the overall regression is highly significant.

Test of Cointegration

To determine whether all the variables included in the estimated ARDL model have a long run relationship, we perform the ARDL Bound test of cointegration. The motivation for this test is that it can be used when variables in the cointegrating relationship have different orders of integration (Pesaran & Shin, 1999). Thus, since some of our variables are I(1), while others are I(0), as reported in table 4.1 above, we proceed to use the bound test to check for any cointegrating relations between excess liquidity and the determinant variables. The

decision criterion for this test is to reject the null hypothesis of no long relationships if the F-statistic is greater than the Critical value bounds at each

conventional level of significance. Otherwise, do not reject the null hypothesis. Table 4.4 shows the test results.

Table 4.4:   ARDL Bound test for cointegration results

Bound Test statistic	Value	
F-statistic	4.348565	
	Critical value bounds	
Significance	**I(0) bound**	**I(1) bound**
10%	2.53	3.59
5%	2.87	4
2.5%	3.19	4.38
1%	3.6	4.9

Source: EViews output

From table 4.4, we can see that the F-statistic (4.348565) has a value that is higher than all conventional levels of significance for I(0) bound, indicating that the test is highly significant. Similarly, the F-statistic is greater than the 10% and 5% significant levels for I(1) bound. However, it is less than the 2.5% and 1% significant levels. Thus, given that the F-statistic is at least, significant at 5% level for both I(0) and I(1) bounds, we therefore, reject the

null hypothesis, and conclude that there exists long-run relationships among the variables included in the estimated ARDL model.

To support this result, we plot the cointegration graph for the variables included in the ARDL specification, which is shown in figure 4.3 below. The plot is expected to show no trend if there is cointegration or long run relationship among the variables.
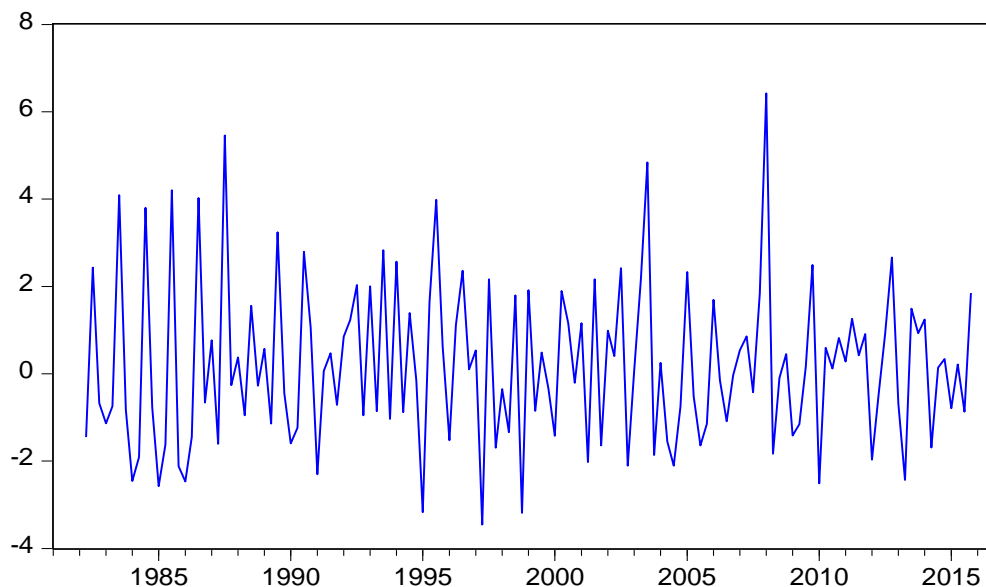

Figure 4.3: Cointegration graph

From figure 4.3, we can see that the cointegration plot appears to be stationary, as there is no trend observed in the graph. This provides

supportive evidence for the results in table 4.4; namely, there is cointegration among the included variables. We can therefore, proceed to examine the

long run relationship between excess liquidity and all the included regressors.

ARDL cointegration and Long-run Form

Table 4.5 shows the results of cointegration relationships for the selected ARDL model.

Table 4.5: Estimation results for Cointegration and Long run equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPS	-0.757012	0.584153	-1.295913	0.1975
LCOB	0.969102	0.267550	3.622136	0.0004
LCGS	0.647662	0.253211	2.557798	0.0118
LMR	0.588136	0.242343	2.426872	0.0167
LFICL	0.285046	0.113380	2.514084	0.0132
LGDP_GAP	-0.159246	0.088317	-1.803113	0.0438
C	-6.137107	5.475740	-1.120781	0.2646
@TREND	-0.065392	0.039195	-1.668407	0.0978

Source: EViews output

From the results in table 4.5, we can see that the long-run impact of a change in each of LCPS, LCOB, LCGS, LMR, LFICL and LGDP_GAP on LEXLQ has no lagged effects. Although, the long-run coefficients differ slightly from those in table 4.3, their significance are very similar. This suggests that the long-run changes in these variables are close to the initial changes.

Discussions, Conclusions and Recommendations

The study attempts to empirically ascertain the factors responsible for the preponderance of surge in liquidity condition of Nigerian economy and ascertain the extent of contribution of each of the determinant variable to the preponderance of excess liquidity. On the a priori expectation, the findings reveal that all the variables conform to the a priori (bearing the expected signs) except the level of financial inclusion which show a significant but positive relationship with excess liquidity in the economy. This might not be unconnected with morale hazards that prevail with the utilization of borrowed funds, where borrowed funds are poorly utilized or misapplied as assert by Okafor, I.G.,

Ezeaku, H.C. and Ugwuegbe, S.U (2016). We measure the level of financial inclusion in the economy with the level of credits extended to the rural sector of the economy. Hence when the credits extended are not used for the purpose for which they are meant or are even poorly utilized for productive activities, the credits will transmit into more money outside the banking system. The implication is that the level of money in circulation will not be commensurate with available goods and services. This exacerbates the excess liquidity position and ultimately fuels inflationary pressures. This is in tandem with the position of Agenor Pierre-Richard and Karim El Aynaoui (2008) but strongly negates that of Korkmaz (2015).

From the findings also, all the variables included in the study significantly account for the prevalence of excess liquidity except the current period's banking system's credit to private sector of the economy. However, the immediate past quarter banking system's credit in the economy is significantly related to the prevalence of excess liquidity in the economy. This might be explained for the timing of utilization of borrowed funds. The trend

and utilization of funds might be poor as the firms' capacities are not fully utilized. However, as the capacity utilization of the firms' production assets increases, the borrowed funds become fully applied into production of more goods and services at the current quarter. This full utilization therefore means less or no leakage of the borrowed funds and in turn does not translate into excess liquidity.

On the contrary, the government borrowing from the banking system according to our findings show as expected a significant and positive relationship with excess liquidity in the economy. Apart from the crowding out effect on the available credit for the private sector, studies have shown that government borrowings in Nigeria are usually poorly utilized. Government most times borrows not to finance productive activities but recurrent expenditure. This usually translates into more money for consumption in the hands of individuals. Thus, when there is high propensity to consume by the individual without commensurate increase in output. There bound to be preponderance of excess liquidity and consequent inflationary pressures. This is in tandem with the arguments of Mbutor, (2014) as well as Bawa, Abdulahi and Ibrahim (2016). This also is supported and corroborated by the significant relationship of output gap with excess liquidity. Output gap as we explained refers to the difference between the potential and actual output in the economy. From our results, the level of output gap has been found to also contribute to the prevalence of excess liquidity in the economy. This implies that the economy is operating below its potential and as such the level of money supply does not measure up to the capacity utilization of the economy and hence more money than is required is chasing few available goods and services with its negative inflationary consequence as affirmed by Agenor Pierre-Richard and Karim El Aynaoui (2008).

On the magnitude of influence, the results show that currency outside the banking system contributes the highest to the prevalence of the excess liquidity phenomenon has the highest positive coefficient at 1.261929, followed by deficit finance operation of the federal government proxied by credit to the central government with a positive coefficient of 0.843362, and monetization of

reserves, level of financial inclusion in the economy and lag (-4) values of excess liquidity with positive coefficient of 0.765850, 0.371176and 0.338327 follow in that order. On the other hand, lag (-3) value of excess liquidity has the highest negative coefficient at -0.165859, followed by output gap at -0.207364, and lag (-2) value of excess liquidity, lag (-1) value of excess liquidity and banking system's credit to the private sector of the economy with a coefficients of -0.223673, -0.250958and-4.569893 follow in that order. The implication is that a lot of money outside the banking which is consequently outside the direct control of the monetary authority remains a major challenge to the economy. The frequent monetization of foreign exchange as an "interventionist policy" and a good number of unbanked public constitute a major determinant of excess liquidity phenomenon. This corroborates the earlier findings by Gray (2006), Bathaluddin, Nur and Wahyu (2012) and Yonghong TU et al (2012). The findings further buttress the fact that Nigerian economy as an open economy is susceptible to the dynamics of foreign exchange dynamics especially as significant part of the foreign reserves is domiciled in US Dollar – a phenomenon Tu, Y., Dai, W., and Zhao, X. (2012) refers to as US Dollar hegemony.

Another, striking revelation from the ARDL results is the signing of the various lags of excess liquidity and their implication in explaining the prevalence of excess liquidity in the economy. As noted from the results, excess liquidity of past periods two, three and four are highly significant but negatively related to current period's excess liquidity except the immediate past period excess liquidity which also is highly significant and positively related to excess liquidity in the economy. This might be unconnected with the efforts of the monetary authority at combating the phenomenon which usually becomes rather daunting and most times appear largely ineffective. This supports the findings of Caprio and Honohan (1991), Nissanke and Aryeetey (1998), Englama and Ogunleye (2009).

Thus, as measures are being taken at countering the presence of excess liquidity, there appears to be positive outcome from the policy measurers embarked by the monetary authority.

This is explained by the negative relationship of past periods two three and four excess liquidity with the current excess liquidity. However, the positive outcome tends to reverse at the immediate past period (quarter) which turns positive. The explanation to this is that the authority tends to focus on the effect of the phenomenon and not the underlying causal or determinant factors which according to our findings include currency outside the banking system, monetization of reserves, credit to the central government, output gap and poor, ineffective and inefficient level of financial inclusion in the economy.

Thus, given the effect of lagged values of excess liquidity on current excess liquidity, it should be expected that without considerable improvement on the policy actions as regards other determinants of excess liquidity, it becomes a self-fulfilling prophesy for future excess liquidity to be dependent on past excess liquidity as well as these other determinant variables. Thus, previous quarters' excess liquidity as one of the major causes of current excess liquidity is understandably logical, in that unless the other key determinants are contained, excess liquidity will continue its spiral effects by helping to trigger more excess liquidity in future periods.

The output gap problem implicates that the economy continues to depend on imports to augment domestic production of goods and services. This portends negative consequence on the foreign exchange market as confirmed by the results of the granger causality estimates.

Conclusion

Recognizing the importance of effective liquidity management and problems associated with excessive accumulation of same in the economy, the study sets out to investigate the contributory factors to the preponderance of excess liquidity as well as the relative strength of their contribution in Nigerian economy. Also, the effect of excess liquidity on macroeconomic variables of real gross domestic product, exchange rate and interest rates is examined.

The Auto Regressive Distributed Lag (ARDL).Vector Autoregression (VAR) Impulse Response as well as Granger Causality was employed to carry out econometric analysis. From the findings we draw a conclusion that that all the variables except private sector credit of the current period account for the presence of excess liquidity. In relative strength of their contribution, the currency outside the banking system, monetization of reserves, government borrowings, poor and inefficient level of financial inclusion and output gap contribute to the preponderance of the phenomenon in that other. However, acknowledge the rather low value of the coefficient of determination for the results of Auto Regressive Distributed Lag which is about 53% and conclude that other factors which our models do not capture are also important in explaining the prevalence of excess liquidity in the economy. This calls for an investigation into the excess liquidity of the banking system which is beyond the scope of this study.

Recommendations

This research work presents fresh discoveries with regards to monetary policy management as a whole and liquidity management in particular. One major inference to be drawn from the findings is that Nigerian economy is riddled with lots of cash outside the banking system which are not (or in most other cases) poorly utilized for productive activities. Consequently, a lot of idle money is chasing few available goods and services which translate into excess liquidity in the system. Again, there appears to be great deal of inefficiencies in the system either from the authorities or the flawed structure of the economy in its entirety. Based on these discoveries and subsequent conclusions we make the following recommendations;

➢ The authorities should fashion out more effective and efficient way of curtailing the huge amount of cash that reside in the hands of the non-banking public. It is imperative and instructive too that the monetary authority should sustain its current contractionary monetary policy stance (in the short run) to mop up excess cash in the domestic economy. The Central of Bank of Nigeria should ensure effective, efficient and timely

combination of monetary policy instruments to help control money supply in the economy.

➢ Recent developments in the polity have given credence to the extremely high level of funds stashed out there outside the banking system through looting by the corrupt public office holders. Current fight against financial crimes should be sustained to help reduce to the barest minimum the level of idle funds that flood the system.

➢ Efforts should be made to improve on the level of financial inclusion in the system. This will help to include greater number of unbanked public into the banking system thereby ensuring more efficiency in monetary policy transmission. Relevant authorities should step up efforts in their supervisory roles as regards the application and utilization of borrowed funds. It pertinent to ensure that funds lent to either the rural dwellers or even mainstream private sector of the economy by the banking system is duly and utilized for the purpose they are meant for to avoid idle balances or money wasting out. This will help to curb the large amount of money that find its way to the economy for consumption purposes either as a result of moral hazards or poor utilization.

➢ Efficient management of foreign exchange is also advocated here. The monetary authority should strengthen its supervisory and monitoring roles in this regard. Foreign exchange allocated to individuals for acquisition of inputs for productive activities should be efficiently monitored to ensure that it is strictly applied for this purpose. Monetized foreign reserves should be channeled to the productive sector of the economy for sustainable economic development instead of current consumption. This is to monitor the proliferation of foreign exchange in the economy as it accounts major for the preponderance of excess liquidity in the economy.

➢ There should be synergy between the monetary and fiscal authorities in policy formulation and implementation. A case where both authorities are champion different and opposing policies is detrimental to the economy and should be discouraged.

➢ Finally, efforts should be made to urgently improve the productive capacity of the economy. The infrastructure deficit should as a matter of deliberate policy addressed. The recent improvement in allocations to capital project is commended and should be sustained. This will help to close the negative output gap in the economy which has proven to be a major source of preponderance of excess liquidity in the system.

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