

LIQUIDITY MEASUREMENT IN NIGERIA

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ABSTRACT

The incidence of excess liquidity is a reality in many economies. Excess liquidity raises concern about inflationary pressures and the transmission mechanism of monetary policy and its effectiveness. Although the incidence of excess liquidity affects a large number of countries, the literature that sets out its measurement are limited. This research seeks to measure excess liquidity in the Nigerian economy. The method of mean deviation was used on time series data from 1970 – 2013 to estimate the extent of excess liquidity in Nigeria. The result obtained showed the presence of excess liquidity and its magnitude in the Nigerian economy. It was recommended amongst others, that contractionary Monetary Policy and prudent use of monetary instruments be used to mop up liquidity that is detrimental to economic growth in the domestic economy.

Introduction

Several attempts have been made at modelling the monetary sector of the Nigerian economy. These studies are dominated by the results of studies based on two approaches: studies such as Olofin and Iyaniwura (1983) which assumed the money stock is exogenously determined by the Central bank and multiplier - based models dominated by the works of Ajayi (1973, 1978) and Uwujaren (1977). The latter approach estimates money supply from the base or high powered money. To these two approaches two others can be added. The flow of funds approach by Afolabi and Bladen Hovell (1986) in which money supply is determined as a residual item of several variables, and the econometric approach by Olofin and Iyaniwura (1983) where money supply is regressed on certain key variables such as government deficits and rate of change of foreign reserve. An important characteristic of the monetary sector is its connection to other sectors, external, fiscal and real in a general equilibrium sense. Hence there is always a need to maintain appropriate monetary growth which would ensure stability in both domestic and external sector of the economy. (Odozi,1992). The ultimate macroeconomic objectives of every economy; price stability, balance of payment equilibrium and sustainable economic growth is predicated on an adequate quantity of money in circulation. Given the key role played by money in an economy, appropriate liquidity measurement becomes necessary in Nigeria so as to facilitate growth and development. This constitutes an important task which this paper seeks to address. The remaining part of this paper are organised under the following headings; Theoretical and Literature Review, Methodology, Analysis and Presentation of Data, Reasons for Excess Liquidity in Nigeria and Conclusion and Recommendations.

Theoretical Framework and Literature Review

The Theory of demand for Money (Cambridge Approach)

A version of the Quantity Theory of Money, argued that an individual's demand for cash balances (or nominal money) is proportional to the individual's money income, Anyawu, (1993). If this were true for all individuals, then the aggregate demand for money (Md) could be written thus

$$M_d = kY \dots\dots\dots(1)$$

Where k is a constant, Y is the value of expenditure on all final goods and services produced during the time period. Since Y is national income in monetary terms, it can be divided into its price and quantity components, so that

$$M_d = kPQ \dots\dots\dots(2),$$

dividing both sides by PQ , gives

$$M/PQ = k \dots\dots\dots(3)$$

Where P is the general price level and Q is real output, k is the reciprocal of the income velocity of circulation of money (which can be defined as the average numbers of times the money supply changes hands in financing the national income). This demand for money arises to enable the community to fulfil its planned expenditure during the intervening periods between receipts of wages, salaries or other forms of income. (Hardwick, Khan and Langmead, 1994). Assuming money supply (M_s) is under the control of the monetary authorities, then at equilibrium

$$M_s = M_d \dots\dots\dots(4)$$

Substituting eqn (2) into eqn (4), we have

$$M_s = kPQ \dots\dots\dots(5)$$

With k constant, and Q fixed because the economy is assumed to remain at full employment, an increase in Money supply will create an excess supply of money. This makes people to increase their spending directly on goods and services, so that the general price level is pulled upwards. As this happens, the demand for money increases and essentially becomes equal to the money supply once more. Thus the Cambridge version of the quantity theory concludes that an increase in money supply leads directly to an increase in spending and with full employment, the general price level is proportional to the quantity of money in circulation.

The Concept of Liquidity

Excess Liquidity

The concept of excess liquidity can be viewed in two ways. First, it can be seen as an economic issue due to the fact that its incidence affects what goes on in the economy (Ndekwa, 1993). It can thus be defined as an amount of liquidity over and above the optimum level of liquidity determined by the level of output and prices.(Onyido 1993) It can also be defined as the deviation of the actual money stock from an estimated equilibrium level (Polliet and Gerdesmeier, 2005). Secondly, excess liquidity can be seen as an administrative decision which comes up while the Central Bank is trying to discharge its responsibility of promoting monetary stability (Omoike, 1993). This gives the administrative definition of excess liquidity. This research however restricts its scope to the economic definition of excess liquidity.

In Nigeria, surge in monetary aggregates was associated amongst others with monetization of oil receipts and the fiscal dominance of government (CBN Annual report 2005). Nwakama (2014) was of the view that in Nigeria, excess liquidity in one period has a tendency to spill over into the next period, thus making it (excess liquidity) self reinforcing in the next period.

The Impact of Excess Liquidity on Key Macroeconomic Variables

The incidence of prolonged deviation of money from its reference value has been a cause for concern among policy makers (Onyido, 1993). When the growth rates of money supply exceed the growth rates of the economy, then there is a surplus growth rate of money circulating in the economy (Roi, 2014). The surplus is in the hands of the public and is a potential inflationary force in the economy. A prolonged growth in this surplus becomes a cause for policy concern. The apex bank in a nation (in Nigeria, CBN) would have to mop up the excess to stem this source of inflationary pressure (CBN, 2005). Although the incidence of excess liquidity affects a large number of countries, (Polleit and Gerdesmeier, 2005) the literature that sets out its measurement are limited. A great deal of literature takes the incidence of excess liquidity as given and from that standpoint measure its impact on key economic variables (Ogunleye and Englama (2009), Onuorah and Ebiringa (2012).

The existence of a general excess liquidity situation in LDCs is documented in Agenor Aizenman and Hoffmaster (2004) and Alkaeli (2006) for the case of Tanzania, Agenor et al (2004), for Nigeria and Ghana, Fielding and Shortland (2002) for Egypt, Khemraj (2006) for Guana, Pontes and Teresa Sol Murta, (2012) for Cape Verde, and Saxegaard (2006) for the CEMAC countries,.

Englama and Segun (2009) investigated the responses of output, real exchange rate and interest rate to shocks to excess liquidity in Nigeria using structural Vector Autoregressive analysis. The result showed excess liquidity is detrimental to real output according to expectation. Also shocks to excess liquidity depreciate the real effective exchange rate and reduces interest rate in the domestic economy.

Onuora and Ebiringa (2010) studied the impact of monetary factors on Nigeria's economic growth in the face of excess liquidity using econometric modelling. The result showed a significant relationship between money supply, foreign exchange rate and economic growth in Nigeria. Olagunju, Adeyanju and Olabode (2011) examined liquidity management and commercial bank's profitability in Nigeria using Pearson Correlation analysis. The findings indicated a significant relationship between liquidity and profitability.

Zhang (2009) analysed the issue of excess liquidity, inflation and exchange rate appreciation in china, the paper shows that excess liquidity ignited by dramatic capital inflows is a significant driver for consumer price inflation in China in the last decade. Khemraj (2006), examined the monetary policy framework of Guyana. The quantity of excess reserves in the banking system was seen as critical in determining bank credit and ultimately the external balance and inflationary pressures. Muhammed, De Haan and Scholters (2014) investigated the drivers of excess liquidity in Pakistan, using the Autoregressive distributed lag approach on weekly data from December 2005 to July 2014. The study revealed that financing of government budget deficit by the Central bank and non banks lead to persistence in excess liquidity.

Jayaraman and Choong (2012) estimated the long term effect of excess liquidity on various economic variables utilizing the Vector Autoregressive Methodology. The finding revealed that excess liquidity is not a major component of forecast variation in loans, exchange rate and lending rate. (Pontes and Teresa Sol Murta, 2012) in the context of Cape verde, see excess reserves as the consequence of domestic credit market, public securities market insufficiencies and the lack of development of the financial sector.

Ferrero, Nobili and Passiglia (2011) in their assessment of excess liquidity in the Euro Area suggested that current excess liquidity conditions have been partly related to the acceleration of non bank financial intermediaries, money demand as well as the accumulation of marketable instruments. It also reported that excess liquidity measure that exclude nonbank financial intermediaries money holdings have more predictive power for future inflation at medium-term horizon than those that include them.

Apart from the threat of inflation and loss of profitability, several authors observed that abundance of liquidity is likely to have adverse consequences on the ability of monetary policy to influence demand conditions and thus to stabilize the economy (Englama and Segun,(2009), Ndekwu; (1990, 1993) Olagunju, Adeyanju and Olabode (2011), Saxegaard (2006), and Teresa Sol Murta, (2012). Agenor, Aizenman and Hoffman (2004) noted that if banks liquidity exceeds regulatory requirements, efforts of monetary authorities aimed at increasing liquidity in order to stimulate aggregate demand will largely be ineffective. In view of the various impacts of excess liquidity on macroeconomic variables, it becomes necessary to measure its incidence with the view that understanding its source and magnitude could arm policy makers with appropriate ammunition to curb its excessive growth.

Methodology

Measurement of Excess Liquidity:

This measure makes use of the equation of exchange adopted by the Cambridge economists (Hardwick, Bahadur and Langmead, 1994) in calculating excess liquidity. The aggregate demand for money can be expressed from equation 1 (Previously defined above) as

$$M_d = kY \dots\dots\dots(1)$$

Where income velocity of money is defined as

$$1/k = V \text{ or } Y/M \dots\dots\dots(4)$$

For the purpose of this research, Ms is defined in two ways, money narrowly defined M₁ and money broadly defined M₂. Then the values of V for the different years under observation are summed together and the mean is obtained. The dispersion from the mean is then calculated. Any value of V that is significantly higher than its mean value is a measure of excess liquidity in the system. (Ndekwu, 1997) This procedure is used both for M₁ and M₂. Hence, V for M₁ is V₁ and V for M₂ is V₂.

Analysis and Data Presentation

This section analyses the data collected to ascertain the existence or nonexistence and the magnitude of excess liquidity in the Nigerian economy. The data for the variables were sourced from World Development Indicators. The tables below present the results obtained using the economic definition of excess liquidity.

Table 1 : Calculation of Excess Liquidity Using Data from (1970-2013)

Year	V1=Y/M1	V2=Y/M2	V1-Mean	V2-Mean
1970	13.94568939	9.150924129	5.500996387	4.180991129
1971	15.48336069	9.958153374	7.038667692	4.988220374
1972	14.76609126	9.163511045	6.321398262	4.193578045
1973	15.54574293	8.942121013	7.101049926	3.972188013

1974	12.10646576	7.562688064	3.661772757	2.592755064
1975	9.316037353	5.686451389	0.871344353	0.716518389
1976	7.673908379	5.01277222	-0.770784621	0.04283922
1977	6.196380141	4.375724727	-2.248312859	-0.594208273
1978	7.068384112	4.793644462	-1.376308888	-0.176288538
1979	6.981307043	4.357079035	-1.463385957	-0.612853965
1980	5.448318474	3.493422474	-2.996374526	-1.476510526
1981	5.308710376	3.394719435	-3.135982624	-1.575213565
1982	5.339942878	3.214361877	-3.104750122	-1.755571123
1983	5.137452692	3.045219132	-3.307240308	-1.924713868
1984	5.270879459	3.028162145	-3.173813541	-1.941770855
1985	5.559824304	3.176349501	-2.884868696	-1.793583499
1986	5.915565945	3.1733779	-2.529127055	-1.7965551
1987	7.507861211	3.873036193	-0.936831789	-1.096896807
1988	6.898212279	3.852051773	-1.546480721	-1.117881227
1989	8.567754396	5.267390347	0.123061396	0.297457347
1990	8.151395782	4.891963721	-0.293297218	-0.077969279
1991	6.756045258	4.161907008	-1.688647742	-0.808025992
1992	7.006709537	4.302928053	-1.437983463	-0.667004947
1993	5.748534432	3.603611152	-2.696158568	-1.366321848
1994	5.299010883	3.542143221	-3.145682117	-1.427789779
1995	9.679422288	6.301111081	1.234729288	1.331178081
1996	11.88159733	7.558149391	3.436904332	2.588216391
1997	10.56577474	6.763818864	2.121081745	1.793885864
1998	8.604959348	5.358074325	0.160266348	0.388141325
1999	8.263529625	4.733568014	-0.181163375	-0.236364986
2000	7.26096566	4.553059768	-1.18372734	-0.416873232
2001	6.059741888	3.749550012	-2.384951112	-1.220382988
2002	7.897774925	4.581693647	-0.546918075	-0.388239353
2003	8.687238574	4.950505487	0.242545574	-0.019427513
2004	9.742466678	5.477557112	1.297773678	0.507624112
2005	9.672430782	5.639471078	1.227737782	0.669538078
2006	10.26285297	5.251581107	1.818159974	0.281648107
2007	6.604236062	3.574955058	-1.840456938	-1.394977942
2008	5.208579938	2.745668688	-3.236113062	-2.224264312
2009	5.507883792	2.452532528	-2.936809208	-2.517400472
2010	10.24562757	4.866035912	1.800934568	-0.103897088
2011	10.1953926	4.998294257	1.750699601	0.028361257
2012	10.27656062	4.79446709	1.831867625	-0.17546591
2013	11.94985708	5.303237229	3.505164084	0.333304229

Source: Author's Computation. Mean of M_1 = 8.4444. Mean of M_2 = 4.9699.

Table 1 shows that, from 1970 - 1975, 1989, 1995 -1998, 2003-2006, 2010 -2013, there was excess liquidity in the system for the narrow definition of money. For the broad definition of money excess liquidity was recorded from 1970 – 1977, 1989, 1995 - 1998, 2004 – 2006, 2011 and 2012. The value of excess liquidity for the narrow money ranged from 0.16 to 7.10, while for the broad money, it ranged from 0.02 to 4.99. The highest level of excess liquidity was recorded in 1973 when the value was 7.10 for narrow money and 4.99 in 1971 for broad money. For the intervening years between the periods listed above there was no excess

liquidity in the economy for both M_1 and M_2 , rather there were cases of excess demand as the demand for money was in excess of its supply, hence, the shortage in supply of both M_1 and M_2 compared to the demand. Excess demand for money ranged from -0.18 to -3.31 for narrow money and from -0.02 to -2.52 for broad money. For the years when there was incidence of excess liquidity, the values were higher for the narrow definition than the broad definition of money. Also with respect to excess demand for money, the narrow definition yielded higher absolute values than the broad definition for the relevant years under consideration. This is due mostly to the fact that M_1 is always lower in actual value than M_2 .

Reasons for Excess Liquidity in Nigeria

- Substantial government monetisation of the naira counterpart of its receipts from petroleum, which over the years, have experienced favourable development intermittently in the international market.
- Substantial Government borrowing from the Banking sector to bridge budgetary gap. Owing to the effect of public sector borrowing on aggregate credit, money supply may be leading money demand. (Odozi, 1992). In the conventional monetary theory, it is assumed that the banking system supplies money to meet the demand for money. With this assumption, the demand for money tends to induce the supply of money. Hence it is conventionally assumed that equilibrium is generally struck between the demand for and supply of money. However in an economy where the supply of money leads the demand for money, equilibrium will not necessarily exist automatically. (Olofin S and Iyaniwura 1983) An excess supply or excess demand may be the rule rather than the exception in the short run. This will lead to disequilibrium in the financial market.
- Prevalence of an underground economy.

The underground economy is believed to exist when activities which are illegal are carried out. These activities include corrupt practices, narcotic trafficking, illegal gambling, currency trafficking etc. Most of these activities listed are conducted essentially through the use of currency, to ensure anonymity (Ndekwa, 1993). This contributes to an increase in the currency requirements in the economy. The effect is the bloated money supply and low income velocity of money.

- Unsophisticated and Rudimentary nature of the Money Market.

Conclusion and Recommendation

In view of the fact that excess liquidity is part of the Nigerian reality and because of its adverse effect on the real sector of the economy, the following are recommended to help solve the incidence of excess liquidity.

- Inflation is the result of past or present lapses in the conduct of monetary policy by the authorities. The solution to inflation resulting from excess liquidity is reduction in the rate of increase of monetary growth. Once inflation has been reduced to an acceptable level, the role of the monetary authority will be that of controlling the growth of the money stock, so that its rate of growth does not exceed that of the economy and real output.
- Coordination of monetary and fiscal policies. Monetary policy cannot succeed at achieving programme targets without the support of fiscal authorities. This coordination is necessary even at the preparatory stage of a programme. The target

rates of growth of output, money supply and the general level of prices should be inputs to the fiscal budget preparation.

- Contractionary Monetary Policy and Prudent use of Monetary instruments especially Open Market Operations (OMO) to mop up liquidity that is detrimental to economic growth in the domestic economy.
- Efficient management of foreign exchange is rather important for curbing excess liquidity.

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