

Impact of Broad Money Supply on Nigerian Economic Growth

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Abstract:

Regarding the fact that money supply and gross domestic product are closely related, this study investigated the relationship between money supply and economic growth in Nigeria adopting ordinary least squares(OLS) technique and also using data obtained from the central bank of Nigeria for the periods 1987 to 2010. To do so, employing other confirmatory quantitative tests like unit root Augmented Dickey Fuller (ADF) test and KPSS, VAR Granger causality test and co-integration, we found that there is a positive and significant relationship between money supply and economic growth in Nigeria. This implies that M_2 has dominant influence on output and prices.

Keywords: *Money Supply, Economic Growth, Financial Development, Interest Rate.*

1. Introduction

Monetary policy is a deliberate measure by the government through the monetary authority Central Bank of Nigeria by the use of interest rate, direction of credits, supply of money etc, to regulate the level of activities in the economy in order to enhance price stability, economic growth and even investment for employment. However, the directions in monetary policy and particularly the emphasis on more reluctant and effective instruments came in the rate of deregulation of money market beginning from 1987. Monetary policy from then on wards laid greater emphasis on preventing money from becoming a major source of disturbance in the economy. Excessive monetary expansion is stabilizing security among other instruments.

Economists have disagreement on the effect of money supply on economic growth (Rasheed,2011). While some believe that the most important determinant of economic growth is variation in the quantity of money and that countries that devote more time to studying the behavior of aggregate money supply rarely experience much variation in their economic activities. Others are suspicious about the role of money or gross national income (Robinson,1952). The implication of the stability of the relationship between money and economic growth will show the effectiveness of monetary policy following the conventional

Hicksian IS-LM analysis (Ogunmuyiwa, 2010).

The relationship between money supply and economic growth has been receiving increasing attention than any other subject matter in the field of monetary economics in recent years. Because of the importance of economic growth among the macro-economic objectives of nations (developed and developing), persistent concern has always been given among monetary economist including Mckinnon (1973), Shaw (1973), Fry (1997), Odedokun (1997), Levine (1997) and Asogu (1998) to the relationship between money supply and output.

Over the years, Nigeria has been controlling her economy through variation in her stock of money. Consequent upon the effect of the collapse of oil price in 1981 and the B.O.P deficit experienced during this period, various methods of stabilization ranging from fiscal to monetary policies were used. Interest rates were fixed and these were said to be beneficial to big borrower farmers (Ojo 1989). Ikhide and Alawode (1993) while evaluating the effect of Structural Adjustment Programme (SAP) concluded that reducing money stock through increased interest rates would lower gross National product. Thus, the notion that stock of money varies with economic activities applies to the Nigerian economy (Laidler 1993).

Monetary aggregates have at times been advocated as guide to monetary policy on the ground that they may have a fairly stable relationship with the economic and can be controlled to a reasonable extreme by the central Bank, either through control over the supply of balances at the federal reserve of the federal fund rat. An increase in the federal fund rat (and other short-term interest rate, for example, will reduce the attractiveness of holding money balances relative to new higher yielding money market instruments and thereby reduce the amount of money demanded and slow growth of the money stock. there are a few measures of the money stock ranging from the transactions dominated M1 of the broader M2 and M3 measures, which include other liquid balances and these aggregates have different behaviours.

The glaring issue is that over many years monetary policy aggregates have been in vogue not to gear up the level of investment but to check the perpetual of unemployment, price level instability, lack of sustainable economic growth, balance of payment disequilibrium, inability to mobilize domestic output. The present conduct of monetary policy by the central bank of Nigeria in conjunction with government fiscal policy has till date not attain the various objectives they have set for themselves. The central problem of financial system worldwide remains the manipulation of quantity of money (M2) in the economy and the implementation of monetary policy with the attendant benefits of the economic growth which Nigeria is not an exception (CBN, 1982).

This paper thus aims to investigate the relationship as well as determine the impact of money supply (broad money supply -M2) on economic growth and further hypothesize that there is no significant impact of broad money supply (M₂) on economic growth of Nigeria. The scope of the study is between 1987 and 2010.

2. Literature of Related Review

The relationship of money with real variables in the economy is one of the long-standing theories

in monetary economics literature that is called the Quantity Theory of Money: $M.V = P.Y$, In This function M (quantity of money) in circulation may be represented by any monetary aggregate such as M0, M1 or M2; V, velocity of money; P, price level that usually measured by GDP deflator or CPI (consumer price index); Y, real value of aggregate output (GDP). This identity usually known as the equation of exchange has generated several debates among economists. First, it has been debated that MV causes PY or PY causes MV. Second, whether velocity (V) and output (Y) are fixed (constant) or not. Third, whether money supply (M) is fixed by the central bank or not? In the classical model of economic output is determined by level of capital and labour. Velocity is assumed fixed therefore any exogenous change in money supply leads to change in price level.

The questions whether money causes output appear to be important for many economists working in the area of macroeconomics. The direction of causation between money and output is an important issue for many policymakers and economists since it reveals appropriate monetary policy. The linkages have been focused extensive debate and analysis macroeconomics literature has been the precise relationship between money and output (Blarchard,1990; Lucas, 1996). Theoretically, models are constructed to show that money can affect output via different channels, including unanticipated monetary shocks, real and nominal rigidities and menu costs. Most economists accept that the causal ordering runs from nominal monetary aggregates to nominal income. However, the issue of how variation in nominal income is manifested between real output and prices remains unresolved. Similar studies that have found a strong support for a positive relationship between money supply and growth include Acemoglu and Ziliboti (1997),Mansor (2005) and Owoye and Onafowora (2007). Modern macroeconomic theories of money and economic development seem to agree that there exist a systematic relationship between money and economic development.

However, empirical researches have largely focused on addressing two issues. First, to examine if money could forecast output given predictive power of past values of output. If so, the second issue is to examine whether such relationship is stable over time or not. Some researchers have found evidence of the predictive ability of monetary aggregates (Beckett and Morris 1992; Krol and Chanian 1993). Though, some of these studies argued that such relationship seems to have changed over time (Beckett and Moris 1992). Hum (1993), disagrees with the observed causality that runs from money to income using evidence from South African data. Jeong (2000) using Thailand socio-economic survey concludes that growth and inequality are strongly associated with money supply and financial deepening. Similar studies that have found a strong support for a positive relationship between money supply and growth include (Sims 1972; Cagan 1956; Greenwood and Jovanovic 1990) Others include (King and Levine 1993; and Neusser and Kinglert 1996). Others include Acemoglu and Ziliboti (1997), Mansor (2005), and Owoye and Onafowora (2007). In Nigeria however, the influence of money supply on economic growth can only be taken with mixed reactions.

Chuku (2009) worked on measuring the effects of monetary policy innovations in Nigeria. He used a structural vector Autoregressive (SVAR) approach to trade the effects of monetary policy shocks on output and prices in Nigeria. The study conducted the experiment using three alternative policy instruments that is broad money (M2), MRR and REER. He found evidence

that monetary innovations carried out on the quantity-based nominal anchor (M2) has modest effects on output and prices with a very fast speed of adjustment. The study concludes that manipulation of the quantity of money (M2) in the economy is the most influential instrument for monetary policy implementation. He recommends that central bankers should place more emphasis on the use of the quantity-based nominal anchor rather than the price-based nominal anchors.

Wosabi and Shabri (2008) studied the dynamic inter-relationship between deposits of Islamic bank with monetary policy variable in Bahrian and Malasia. Both of these countries are being dubbed as the world's largest international Islamic financial hubs. A comparative analysis between these two countries highlights the differences and similarities of the impact of monetary policy shocks on the Islamic banks deposits. The analysis comprises of two major testing approaches. First, the Auto-Regressive Distributed Lag (ARDL) model is used to examine the long-run relationship among the variables. Second, the vector Error correlation Model (VECM) is adopted to explore the short and long-run dynamic between the variables. The study focuses on the Malaysia and Bahrain data covering the period from 2001 to 2006. The results from their test would determine if the deposits plays significant role in transmitting monetary policy effects to the economy. Compared to the Malaysia Islamic banks deposits, the study finds that the Islamic banks' deposits in Bahrain are sensitive to monetary policy changes.

Mbutor (2010) studied on monetary policy in enhancing remittances for economic growth in Nigeria. The vector autoregressive methodology was applied with two stage deductions. The monetary policy rate first impacts intervening variables-exchange rate inflation etc- which in turn impact remittance flows. The data set are tested for temporary properties, including unit roots and co-integration. Evidence shows that domestic economic prosperity increases remittance to Nigeria; while exchange rate depreciation depresses remittances. The latter-outcome reflects remitters' perception that a stronger naira is a sign of things getting back home.

Ogunmujiwa and Ekone (2010) studied monetary supply economic growth Nexus in Nigeria. This study investigated the impact of money supply on economic growth in Nigeria from 1980 to 2006. Applying economic growth in Nigeria from causality test and E.C.M. to time series data, the results revealed that although money supply is positively related to growth but the result is however insignificant in the case of GDP (Gross Domestic Product) growth rates on the choice between contractionary and expansionary money supply.

3. Research Methodology and Data

This research work adopted quantitative (ex-post facto) approach. The reason for adopting this design is based on the fact that the researcher has no direct control nor can manipulate the data as they appeared. Meanwhile the purpose of the study was to determine the impact of money supply on Nigeria economic growth for the periods 1987 to 2010 covering our time series data exhibiting the structural adjustment programme eras. The data used for the study was secondary data. These data were obtained from the publication of the central bank of Nigeria (CBN) statistical bulletin and Federal Bureau of statistics.

The variables; RGDP, INFL, MPR, EXR, INRATE, and M_2 are the baseline explanatory variables that have been shown to be robust determinant of economic growth and are revolved

into the model. The study adopted the growth equation and regression model. The model is stated thus: $Q = f(K,L) \dots (1)$; Where K is the capital, L the labour, and Q the population output of an economy. In line with the objectives of this study, the regression model is derived from equation 1 above as follows:

$$RGDP = B_0 + B_1M_2 + B_2INFL + B_3INTR + B_4EXCHR + B_5MPR + \mu \dots (2)$$

The standard econometric tests unit root test and co-integration test were used to test for spurious regression results. The conventional Deckey-Fuller (DF) and Augmented Dickey-Fuller (ADF) were used to test for stationarity of the series. Preliminary test for some of the basic assumptions for multiple regression models was carried out.

4. Empirical Results and Discussion

This section presents results of empirical analysis of the paper. Unit root is reported first followed by Johanson Co-integration test result and lastly Granger causality result is presented. The first step is to test whether the relevant variables in equation 2 are stationary and to determine their order of integration. We use both the ADF and KPSS tests to find the existence of unit root in each of the time series.

Table 1: Unit Root test on Variables with Intercept

Variable	Augmented Dickey- (ADF) Test			KPSS Test		
	Level	Difference	Status	Level	1 st Difference	Status
RGDP	0.8745	-13.5436*	1(1)	0.3425	12.1423	1(1)
M2	0.3215	19.7534*	1(1)	-1.0064	-31.0655	1(1)
EXR	-7.1642	-	1(0)	-5.3425*	-	1(1)
INF	-3.6226	-9.4324*	1(1)	-2.5326	-6.4352	1(1)
MFR	-3.5363	-7.7632	1(1)	-4.3042	-9.5368	1(0)
INTR	-0.8540	-9.3664*	1(1)	0.5601	-9.5343*	1(1)

Note: * Implies Variables are stationary at one percent,

** Implies Variables are stationary at five percent

From the result all other variables possess unit root and became stationary at first differences. For the MRR, we obtained inconsistent stationarity results. The ADF test did not reject the hypothesis of the presence of a unit root in the levels. However, the KPSS test gave result that suggests stationarity at the series level.

The Johansen (1988) and Engle and Granger (1987) co-integration test was employed. However, in order to overcome the challenge of inconsistencies, the co-integration among the variable is examined through ARDL methodology. The superiority of the ARDL co-integration approach above others is that, the ARDL co-integration or stationarity level. The estimates of the ARDL

co-integration tests are presented in the table 2 below.

Table 2: F-statistics for Testing the Existence of Co-Integration

Variables	F-statistics
RGDP	16.311
M2	12.783
INFL	17.654
MRR	21.432

Critical value: 1% = 3.457 – 4.943; 2% = 2.627 – 3.386; 3% = 2.236 – 3.381

The co-integration test shows that, the null hypotheses of no co-integration between the variables are rejected, which indicates that there is co-integration between economic growth and monetary policy variables irrespective of the significance levels, thus reflecting a long-run relationship among the variables in the model.

Table 3: VAR Estimation Result

Variables	Coefficient	Std. error	T-statistics	Prob.
Constant	0.713828	0.413878	0.927394	0.4669
M ₂	-0.000907	0.45227	3.235342	0.7950
EXR	-0.6544129	0.25651	1.3050	0.0776
INF	-0.038881	0.01551	-2.5022	0.05544
MRR	-0.005118	0.034925	-0.684156	0.7694
ECM _{T-1}	1.331549	0.418071	-4.451705	0.0024

Statistics analysis: E-views 6.0

Table 4: Modeling RGDP by OLS

Variables	Coefficient	Std. error	t-statistics	Prob.
Constant	0.593150	0.144167	2.898918	0.00068
M ₂	0.323554	0.033223	4.076533	0.009
INFL	0.237126	0.072200	3.145774	0.0055
BLR	0.014668	0.030087	-2.540263	0.0003
ECM _{t-1}	-1.605304	0.271916	-4.95946	0.0007

Statistical Analysis: E-views 6.0

The result revealed that error correlation term, (ECM) which is used to switch to short run model indicated a feedback of 60% of the previous year's disequilibrium from the long-run elasticity of the monetary policy and economic growth, this means that the explanatory variables maintain the GDP equilibrium through time.

The results from the ordinary least square (OLS) regression as above represented, adjusted against the identifies violation of the back ordinary least square (OLS) regression conditions are applied in testing the three hypothesis set out in this included the OLS regression coefficients paired with the value of t-statistics. This is in line with the advice of Dougherty (1997) that t –

test assesses whether the individual contributions of the explanatory variables are significant and so can well be used as a basis for testing the hypotheses on the relationship between variables and independent variables.

The test result contained in table 4 indicate that the coefficient is 0.323554 and the standard error is 0.033223. The t-statistics for the monetary policy on money supply is 4.07653 and the probability is 0.009. This shows a lack of support for the null hypothesis and acceptance of the alternative hypothesis that M_2 significantly impacts on economic growth of Nigeria within the period under study.

5. CONCLUSION

This study evaluated the effect of money supply within the institutional framework and basic theoretical model on economic growth of Nigeria for the periods 1987 to 2010. The study used secondary data obtained from main stream publications of central bank of Nigeria. The findings based on the empirical analysis albeit, support that aggregate money supply is positively related to economic growth. This in turn suggests that efforts should be made by government to ensure appropriate policy mix for harmony and proper coordination of economic policies and greater attention directed to M_2 .

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