

Comparative Analysis of Monetary Policy Measures and Nigerian Economic Growth (2009-2018)

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Abstract: *Within the West African sub-region, Nigeria's economy is huge enough as an attraction, although its growth rates fluctuate contrary to economic projections. The government has adopted a number of monetary policy measures to improve the economy over the years. This study is a comparative analysis of monetary policy measures in relation to economic growth for the period 2009-2018. As a problem for investigation, pre-research observation revealed gaps in monetary policy measures implementation which motivated this study. The overall objective of the paper was to determine the impact of monetary policy measures on economic growth. Secondary data were drawn and subjected to econometric analysis with highlights of vector auto regression and correlation analyses. One of the major findings is the critical role of the Central Bank of Nigeria (CBN) in consistently adjusting policies to address the status of the Nigerian economy. However, results showed among others that monetary policy is not the sole determinant of economic growth, although cash reserve ratio was found to have a significant impact on economic growth. In conclusion, while monetary policy provides the impetus for fiscal discipline, operational infrastructure and investment are necessary for growth. As part of recommendations, the CBN should be more disciplined in its approach at tracking open market operations and monitoring policy objectives.*

Keywords: Monetary, fiscal policy, Central Bank of Nigeria

1.0 Introduction

Economic growth is a function of several indices, and the parameters for assessing such growth differ according to objectives set out. Furthermore, survival and viability of an economic system are hinged on the capacity of the system to engage and accommodate activities that can improve and sustain both production and productivity. Economic activities are essentially driven by the commitment of funds for which the banking cum financial sector has been designed to play a critical role. However, the financial intermediation role of the sector is governed by monetary policy measures. Nigeria's economy is though large, covering a wide base of sub-sectors, huge earnings are relied upon solely from the oil sector which is prone to fluctuations and vagaries of the oil market for Nigeria's oil (Oloko, 2015).

Nigeria's economy is typically structured in the nature of a developing country. Until recently, the bulk of the country's gross domestic product (GDP) was from oil. However, the non-oil sector took the lead slightly. In the years after independence before the discovery of crude oil in commercial quantities, agriculture was the main foreign exchange earner (Oguide, 2017). But over the decades a significant shortfall has continually been recorded in the agricultural sector. Nigeria is naturally endowed with a variety of resources most of which are yet to be adequately explored. Nonetheless, the potential of the economy to grow is rooted in natural resources across the country's geographical expanse.

Economic systems respond to infrastructure. Indeed, infrastructure is the platform for economic growth and development. Monetary measures can only be viewed as guiding variables which are of utmost necessity for the purpose of attaining sustainable economic development. Certain economic issues portray economic growth as weak. For instance, the government's consistent recourse to borrowing from external sources and poor budgetary performance could be traced to the unhealthy state of the economy (Chete, Adeoti, Adeyinka & Ogundele, 2016). Since the establishment of the Central Bank of Nigeria (CBN), succeeding governments have enunciated both monetary and economic policies. The CBN is statutorily empowered to anchor government's monetary policy measures. Although its advisory role in the formulation and implementation of monetary policy measures is acknowledged, performance of monetary policy measures across all the decades has been with mixed results, inconclusive and open to further empirical investigation.

One major reason for unimpressive performance of the Nigerian economy in recent times is the structural imbalance of the economy (Ademola, 2016). Furthermore, it is plausible to state that the informal sector is not captured in terms of data reflection by policy measures. There are therefore loopholes for stakeholders in the informal sector to sidetrack government's monetary policy measures. Nonetheless, in order to improve the economy, it is imperative to examine the relationship between monetary policy measures and economic growth in Nigeria. This paper is structured into six parts. In what follows, part 2 explores literature covering conceptual, theoretical and empirical review. Parts 3 and 4 provide methodology and analysis/discussion of findings respectively. In part 5, summary, conclusion and recommendations are given while part 6 states the contribution of the paper to knowledge.

1.1 Statement of the Problem

Nigeria has remained a developing country since independence. In spite of monetary policies, the economic status of the country remains the same. Indeed, economic recession in from 2016-2017, arising inarticulate management of macro-economic indices, inflation and high rate of unemployment are indications of flaws in the execution of government's monetary policy measures. The major objective of a monetary policy is to ensure stable economic growth. But Nigeria's economic growth is uneven; neither does it translate to economic wellbeing for the population. Economic growth as represented by the gross domestic product (GDP) consistently fluctuates over the years. Given the non-performance of certain sectors, weak infrastructure and crisis in the manufacturing sector, it is presumed that monetary policy measures are either not as effective as expected or system flaws hinder the implementation of such measures. There is apparently a gap that needs to be addressed. It is assumed that a strong correlation exists between monetary policy and economic growth. It is therefore appropriate to attempt a comparative analysis of monetary policy measures and economic growth in relation to the Nigerian economy.

1.2 Research Objective

The overall objective of the paper is to determine the correlation between monetary policy measures and economic growth in Nigeria.

1.3 Research Questions

The paper attempts to answer some questions, and is also guided by the questions in examining the variables set out.

- i. To what extent does cash reserve ratio have any impact on economic growth in Nigeria?
- ii. What is the correlation between liquidity ratio and economic growth in Nigeria?
- iii. To what extent is money supply a determinant of economic growth in Nigeria?
- iv. Does monetary policy determine economic growth in Nigeria?
- v.

1.4 Statement of Variables

Independent variables: cash reserve ratio; liquidity ratio; money supply and monetary policy

Dependent variable: economic growth

1.5 Hypotheses

H₀₁: Cash reserve ratio has no impact on economic growth in Nigeria.

H₀₂: Liquidity ratio has no impact on economic growth in Nigeria.

H₀₃: Money supply is not a determinant of economic growth in Nigeria.

H₀₄: Monetary policy is not a determinant of economic growth in Nigeria.

2.0 Review of Literature

2.1 Conceptual Review

The concept of monetary policy has attracted much discourse in economic research aimed at improving and stabilizing the economy system. However, the effectiveness of monetary control is anchored on policy, hence the term monetary control policy (Sulkah, 2019). Other writers (Cheteet *al*, 2016) prefer a general term such monetary regulation to capture how monetary interactions are handled in the economy. Monetary policy is conceived as a deliberate action to control money supply and the volume of credit available within an economic system (Odiegwu, 2018). Although this is implemented through the banking system, the essence of monetary policy is to influence economic activities (Ademola, 2016). Betagh (2020) puts the essence of monetary policy as boosting economic activities by which means investment is encouraged. While monetary policy is directed at stimulating productive investment, its effectiveness is characterized by framing the right objectives and designing appropriate instruments which represent it as tools.

The major objective of monetary policy in a developing economy is to create micro-economic conditions for long-term growth (Iyoha & Ogun, 2005). Financial scholars have classified monetary control into direct and indirect categories (Agrawal, 2015). The principal policy instrument applied by monetary authorities to control money stock under the indirect monetary regime include cash reserve ratio and liquidity ratio (Betagh, 2020). By cash reserve ratio, banks are required to hold a specific proportion of deposit liabilities as cash deposits with the highest financial authority, namely the central bank. The technicalities involved in this operation assume that where the percentage of bank reserves stipulated as legal cash reserve ratio (CRR) is higher, the proportion of bank funds available for credit expansion is reduced, that is, it is stipulated to be lower. This principle reduces banks' ability to create money.

On the other hand, a reduction in the cash reserves ratio increases banks' capacity to create credit. CRR is an effective instrument for mopping excess liquidity in the financial system. In Nigeria's case, the CBN initiates, implements and controls monetary operations thus directing the behavior of the investment climate. As a consequence, variations in cash and liquidity ratios by banks affect credit expansion (Agrawal, 2013; Gbenenye, 2014). Liquidity of banks is the capacity to control credit at their disposal for commercial and other business transactions. But the CBN reserves the power to control excess liquidity thus bringing about a degree of financial stability (Akande, 2014; Iyoha&Ogun, 2005). The rates of determination of ratios of liquidity and cash reserves are within the prerogative of the CBN, although other micro-economic forces receive cognizance. Generally, manipulation of the custody and movement of credit by policy regulation constitute the concept of monetary policy. In furtherance, use of monetary control predominates monetary operations in developing countries.

Indirect instruments of monetary control are adopted in market-based economies where the quantity of money can be influenced through the relationship between money supply and reserves as well as the ability of the monetary authorities to influence reserves creation. In times of stringent monetary policy, the central bank sells securities to banks to reduce their liquidity. This measure ultimately reduces banks' ability to extend loans and expand money supply (Essien, 2014). Conversely, expansionary monetary policy involves purchase of government securities by the CBN. By this measure, payment for such securities increases liquidity in the system with the resultant effect of expanding credit. Generally, indirect monetary instruments are easy to manipulate to achieve monetary objectives.

2.2 Theoretical Review

Developing countries are faced with the challenge of choice of appropriate theory to match their micro-economic issues. Nevertheless, the choice of any theory is, and should be predicated on existing economic variables which are open to investigation and analysis. For Nigeria, and considering the service and market orientation of its economy in relation to the critical role that the banking system plays in the economy (Westley, 2016), it is apt to consider the Harrod-Domar growth theory. Because gross domestic product (GDP) is not only a proxy of economic growth, but a reflection of transactions and production capacity, it is a critical component of economic development. The Harrod-Domar growth theory suffices in the context of this paper with specific reference to the Nigerian economy.

For a nation that seeks development, mobilization of funds for investment is *sine qua non* for financial investment and accelerated economic growth (Todaro & Smith, 2011). The Harrod-Domar theory advances an economic relationship in which the growth rate of GDP depends on national net savings rate and national capital-output ratio. Westley (2016), Todaro and Smith (2011) aver that policy issues in developing countries attract the application of the theory. Financial investment and savings are economic activities in which the banking sector is involved, but the same sector is subjected to the dictates of monetary policy measures, most of which are either misguided, constrained by lack of fiscal discipline or altered by structural imbalance and market failure in developing countries (Gandirah, 2020).

Development is a function of investment, and the banking sector is designed to drive investment. The extent of liquidity available to any bank is what borrowers can access, provided the interest on borrowing is favourable. Simply put, cash reserve and liquidity ratios determine indirectly borrowing interest rate. The theory is hinged on fund flow to banks for investment purposes.

2.3 Empirical Review

Studies on economic growth and monetary policy in Nigeria have been conducted, incorporating series of variables and methodologies. Such studies have adopted different time periods. Again, sectoral differences and data variations are observed. Consequently, there are mixed results arising from such studies. Nevertheless, in an econometric investigation conducted by Baghebo and Stephen (2014), using ordinary least square regression analysis, it was found that monetary policies played a critical role in Nigeria's economy in the period 1980-2011. In another study, Oguide (2017) found a statistically significant and positive impact of cash reserve ratio on loan interest in the banking sector, although the study featured only secondary data from three banks, covering a period of less than 10 years.

The correlation between exchange rate and bank interest rate had been investigated, and it was found that exchange rate during the bank pre-recapitalization era had a strong statistical correlation with interest rate (Ademola, 2016). The study also established that exchange rate policy had a strong impact on interest rate during the period of investigation. However, the interest rate data used were at variance with the interest rate range stipulated by the CBN. In a comparative study involving selected, Baden (2019) found that monetary policy in developed economies consistently drives the attainment of economic growth, and thus maintains a relatively reliable level of stability than in developing economies. The study employed data from selected economies covering the period 1990-2018. Although the econometric models adopted are robust, data from most of the developing economies show weakness, arising from non-inclusiveness of the informal sector.

In another comparative study, Oloko (2015), using trend analysis and auto regression investigated the correlational relationship between monetary policy and bank profits during the Nigerian military era 1970-1979. The study found a stable and stimulating correlation, revealing that monetary policy during the era was growth-inducing. World Bank studies (2005; 2006) have equally highlighted weak micro-economic environment laden with corrupt practices as the major root of poor economic growth in Nigeria, and not the components of monetary policy. Furthermore, Akande (2014) found that small and medium scale enterprises (SMES)

cannot thrive consistently productively because of constraints from monetary policy. The study proved that monetary policy has both a negative impact and implications on SMES even though the methodology was devoid of econometric analysis.

3.0 Methodology

The study deployed secondary data to reflect the variables embedded in the research hypotheses, covering the period in question, but relying on the CBN as major source of data. Models were developed to capture both independent and dependent variables. Essentially, econometric analysis was integrated, using vector auto regression (VAR) trend analysis and correlation analysis. In the process, all formulated hypotheses were tested accordingly. The principal methodological approach to this study is the Vector Auto regression (VAR). A VAR model describes the evolution of a set of variables over the same sample periods. It is a stochastic process model which is used to capture the linear interdependency among multiple time series.

Given a set of variables as:

$$Y_t = (y_{1t}, y_{2t}, \dots, y_{nt}) \dots \dots \dots 1$$

Denoting a 'kx1' vector of the time series; the basic p-lag auto regression [VAR (p)] model is stated as:

$$Y_t = \Phi_0 + \Phi_1 y_{t-1} + \Phi_2 y_{t-2} + \dots + \Phi_p y_{t-p} + \epsilon_t; \dots \dots \dots 2$$

t=1, T; p>0

Equation '1' is decomposable to as many equations as the number of variables in the systems expressed both endogenously and exogenously. Therefore, Φ is a time invariant kxk vector of coefficients; p is the maximum lag length; ε is a sequence of serially uncorrelated random term vectors with zero mean and covariance. In this study, the relevant monetary policy measures and economic growth variables include:

- i. Real Gross Domestic Production (RGDP);
- ii. Broad Money Supply (M2);
- iii. Cash Reserve Ratio (CRR);
- iv. Liquidity Ratio (LR); and
- v. Monetary Policy Rate (MPR)

From equation '1' therefore, $Y_t = (M2, CRR, LR, MPR) \dots \dots \dots 3$

Considering that broad of object of the study which is to evaluate the impact of these monetary policy measures on Economic growth, Real GDP is expressed as dependent variable in the baseline equation as follows:

$$RGDP = r(M2, CR, LR, MPR) \dots \dots \dots 4$$

The relevant variables are expressed in log form and the mathematical relationship as below.

$$\log(RGDP) = \alpha_0 + \alpha_1 \log M2 + \alpha_2 CR + \alpha_3 LR + \alpha_4 MPR + u_t \dots \dots \dots 5$$

$\alpha_1 > 0; \alpha_2 < 0; \alpha_3 > 0; \text{ and } \alpha_4 < 0; \dots \dots \dots A - \text{Priori Expectation}$

Equations '2' and '5' can be estimated using the Ordinary Least Square (OLS) estimation technique.

3.1 Optimum Lag Selection

The Maximum Lag lengths for endogenous variables in the system was selected based on information provided by five penalty criteria which include Likelihood Ratio (LR) test, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ).

3.2 Impulse Response Functions (IRFs) and Variance Decomposition (VDs)

The novelties of this mythology are the Impulse Response Functions (IRFs) and Variance Decompositions (VDs). The IRF measures the change in a variable due to shock to itself and to other variables in the VAR system. Similarly, VDs measures the proportion of forecast error variance in one variable explained by innovations in itself and the other variables in the system.

4.0 Analysis and discussion of findings

The study investigated the performance of the various monetary policy measures employed by the Central Bank of Nigeria for the management of the Nigerian economy. The study measures comparatively, the relationship between the growth of Nigerian economy proxied with Real gross Domestic Product (GDP) and Monetary Policy variables of Broad Money supply (M2), Liquidity Ratio (LR), Cash reserve Ratio (CRR) and Monetary Policy Rate (MPR) using Vector Auto regression (VAR) methodology. The rest of the section presents the results of the descriptive, trend and correlation analyses, relevant diagnostics, test Impulse Response Functions (IRFs) and Variance Decompositions (VDs) analyses.

4.1 Descriptive Analysis

Table 4.1: Result of Descriptive Analysis of research Variables Data

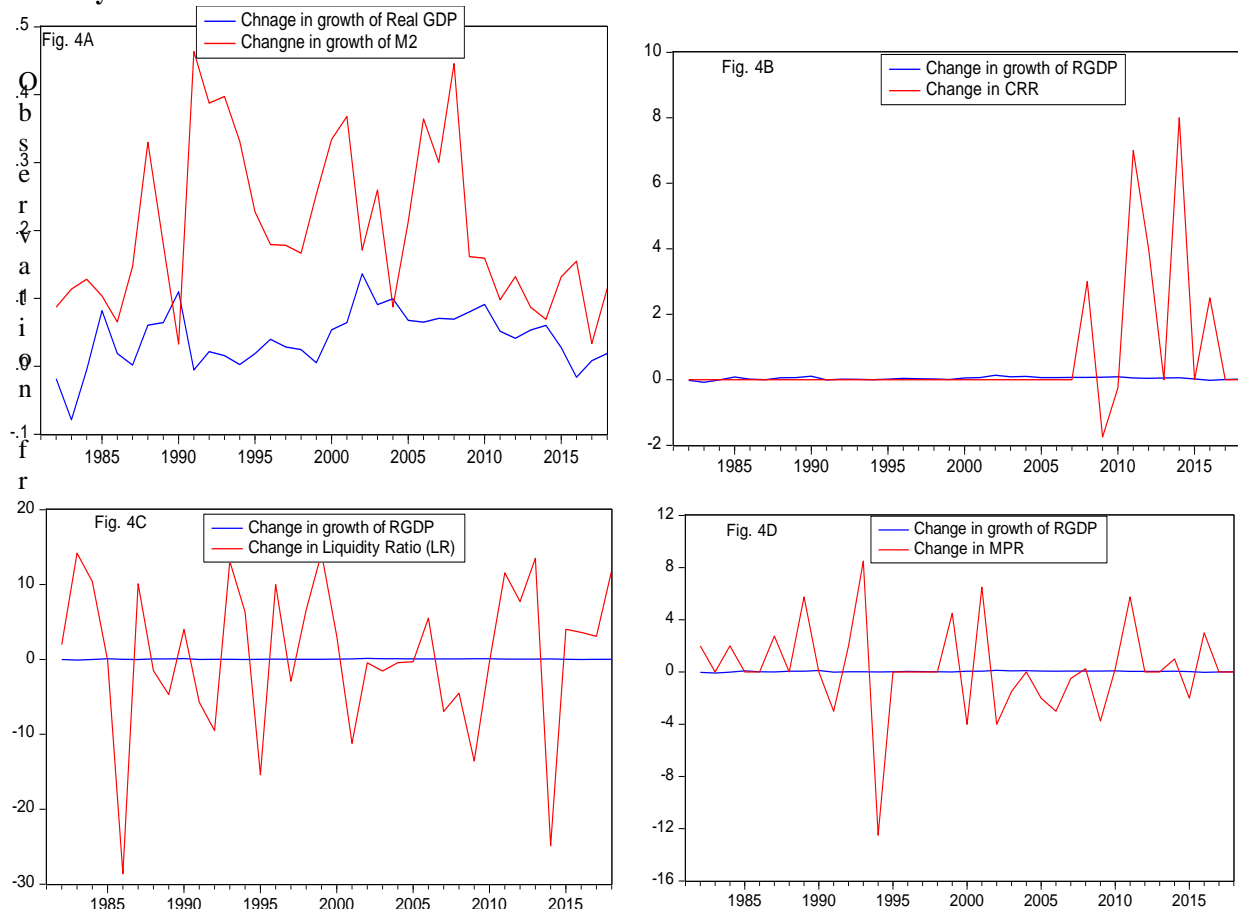
	Cash Reserve Ration (CRR) (%)	Liquidity ratio (LR) (%)	Broad Money Supply (M2) (NB)	Monetary Policy Rate (MPR) (%)	RGDP (NB)
Mean	3.809211	46.87564	5153.387	13.06579	33724.95

Median	0.000000	46.22500	753.7047	13.25000	23068.85
Maximum	22.50000	65.10000	25079.72	26.00000	69799.94
Minimum	0.000000	29.10000	14.47117	6.000000	13779.26
Std. Dev.	7.588984	9.688912	7536.495	4.100381	19577.60
Skewness	1.737002	0.232892	1.337830	0.669171	0.734360
Kurtosis	4.340420	2.459827	3.431295	4.231054	1.996416
Coefficient of Variation (CV)	199%	20.7%	146.2%	33.6%	58.1%
Jarque-Bera	21.95361	0.805509	11.62986	5.235529	5.010169
Probability	0.000017	0.668476	0.002983	0.072966	0.081669
Sum	144.7500	1781.274	195828.7	496.5000	1281548.
Sum Sq. Dev.	2130.929	3473.375	2.10E+09	622.0855	1.42E+10
Observations	38	38	38	38	38

Source: Computed with E-View software

Table 4.1 presents the result of descriptive analysis of the variables considered in the study. The variables properties such as mean, median standard deviation, skewness and Kurtosis, and coefficient of Variation were considered in order to determine the smoothness or otherwise whether the data encountered variability within the period of study. From the result, high coefficients of variation were observed among the variables data: 199% for CRR; 20.7% for Liquidity Ratio; 146.2% for M2; 33.6% for MPR; and 58.1% for Real GDP. This shows the time series were not smoothly distributed as measured.

4.2 Trend Analysis



From Figures 4A to 4D presents that the change in growth of variables which measures their volatility. While the plots of M2, CRR, LR and MPR present a volatile scenario, real GDP appears to be flat across the period thus indicating no volatility as measured by the Monetary authority.

4.3 Correlation Analysis

Table 4.2: Correlation Coefficients

	M2	CRR	LR	MPR
RGDP	0.9555 (0.0000)	0.8504 (0.0000)	0.0142 (0.9324)	-0.1734 (0.2976)

Note: Probability Values (p-Vs) of correlation coefficients are in parentheses.

Table 4.2 below presents the correlation matrix for real GDO against Broad Money Supply (M2), Cash Reserve Ratio (CRR), Liquidity Ratio (LR) and Monetary Policy Rate (MPR). The result indicates that Real GDP has strong positive correlation with M2 (R=0.9555; p-V=0.0000) and CRR (R=0.8504; p-V=0.0000) respectively. The Implication of the result is that Real GDP and the two variables move towards the same direction at the significant proportion. However, the analysis found no meaningful association between Liquidity ratio (R=0.0142; p-V=0.9324) and MPR (R=-0.1734; p-V=0.2976).

4.4 Model Estimation

4.4.1 Preliminary Estimate of the Baseline Model

$$\text{LogRGDP} = 9.281 + 0.183\text{LogM2} + 0.016\text{CRR} - 0.003\text{LR} - 0.011\text{MPR}$$

p-Vs (0.0000) (0.0000) (0.0000) (0.0614) (0.0039)

R² = 0.9797; \bar{R}^2 = 0.9773; Prob (F-statistic) = 0.0000

Durbin Watson Statistic (DW) = 0.635563

Note: Probability values (p-Vs) are in parentheses.

A preliminary examination of the causal relationship between Real GDP and the other monetary measure variables using a multiple Linear regression shows that Coefficient of Determination, R² of 97.97% and Adjusted-R² of 97.73% which suggest a good fit for the estimate. The result is corroborated by the F-Statistics with probability value of 0.0000 which indicates that the overall regression line is significant. However, Durbin-Watson statistic with the value of 0.635563 shows the presence of Autocorrelation in function. The result of DW-statistic implies that the estimate of the function is not robust for any meaningful decision making. A reason for the presence of autocorrelation and by extension the meaningless of the result was because the time series were not stationary as supported by the Unit Root test in the 4.3.

Table 4.3: Augmented Dickey-Fuller Result

Variable	Order of integration	T (Tau)	MacKinnon Critical Values	
Cash reserve Ratio (CRR)	1	***-8.7514304	-3.689194 -2.971853 -2.625121	1% 5% 10%
Liquidity Ratio (LR)	1	***-6.522654	-3.626784 -2.945842 -2.611531	1% 5% 10%
Monetary Policy Rate (MPR)	1	***-6.453603	-3.626784 -2.945842 -2.611531	1% 5% 10%
Broad Money Supply (M2)	1	***-3.662891	-3.626784 -2.945842 -2.611531	1% 5% 10%
Real GDP	1	** -3.394454	-3.626784 -2.945842 -2.611531	1% 5% 10%

***Significant at 1% Mackinnon levels significance; **Significant at 5% Mackinnon levels significance

The ADF result in table 4.3 above indicate that all the variables CRR, LR, MPR, M2 and Real GDP are non-stationary at level but were stationary at first differences; that is integrated at Order one (1) respectively.: CRR~I(1), LR~I(1), MPR~I(1), M2~I(1) and RGDP~I(1). The integrated versions of the variables were deployed in the VAR analysis.

4.4.2 VAR Estimates

Table 4.4: Optimal VAR Lag Length of the VAR

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-194.1132	NA	0.119813	12.06747	12.29421*	12.14376*
1	-166.2453	45.60212	0.102767*	11.89365	13.25411	12.35141
2	-151.7345	19.34765	0.217052	12.52937	15.02355	13.36858
3	-114.0868	38.78856*	0.137794	11.76284	15.39073	12.98351
4	-80.52637	24.40760	0.167192	11.24402*	16.00564	12.84616

Note: FPE=Final prediction error; AIC=Akaike information criterion; SIC=Schwarz information criterion; HQ=Hannan-Quinn information criterion;

The result of the optimum lag length analysis in table 4.4 indicates lag length four (4) as presented by Akaike Information Criteria (AIC). Therefore, the optimum lag length used in the VAR analysis was four (4).

Fig. 4E: AR Test for Stability of the Model

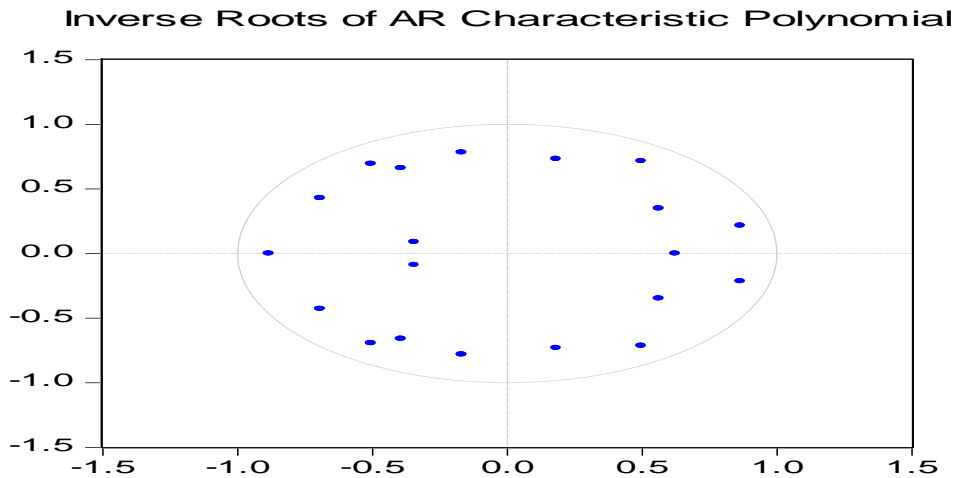
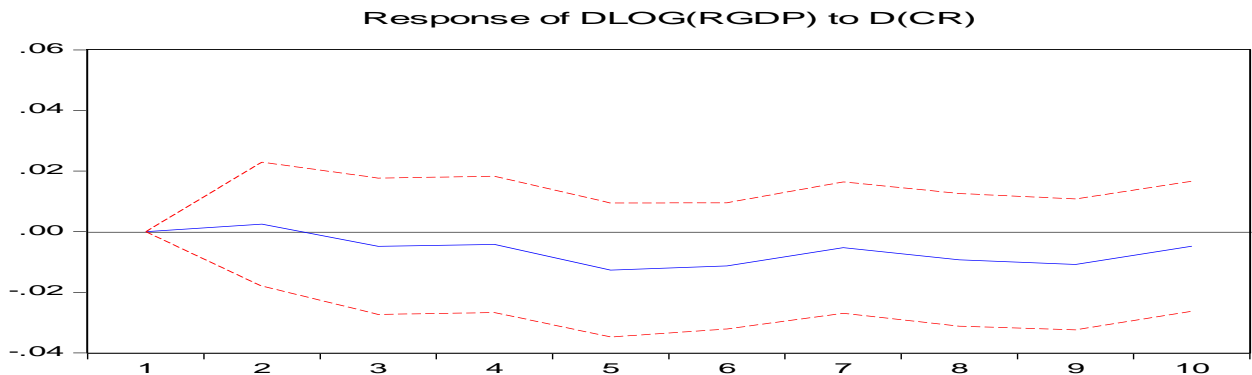


Figure 4E above shows that all the inverse roots lay within the unity circle, thus indicating that the VAR model is stable.

4.4.3 Impulse Response Functions (IRFs)

Figure 4F: IRF OF Real GDP due to shock to Cash Reserve Ratio (CRR)



The Impulse Response Function (IRF) of Fig. 4F shows that RGDP responded negatively to changes in Cash Reserve Ratio over the periods. The result implies that CRR determines the direction of change in RGDP in Nigeria which in this cash declining.

F

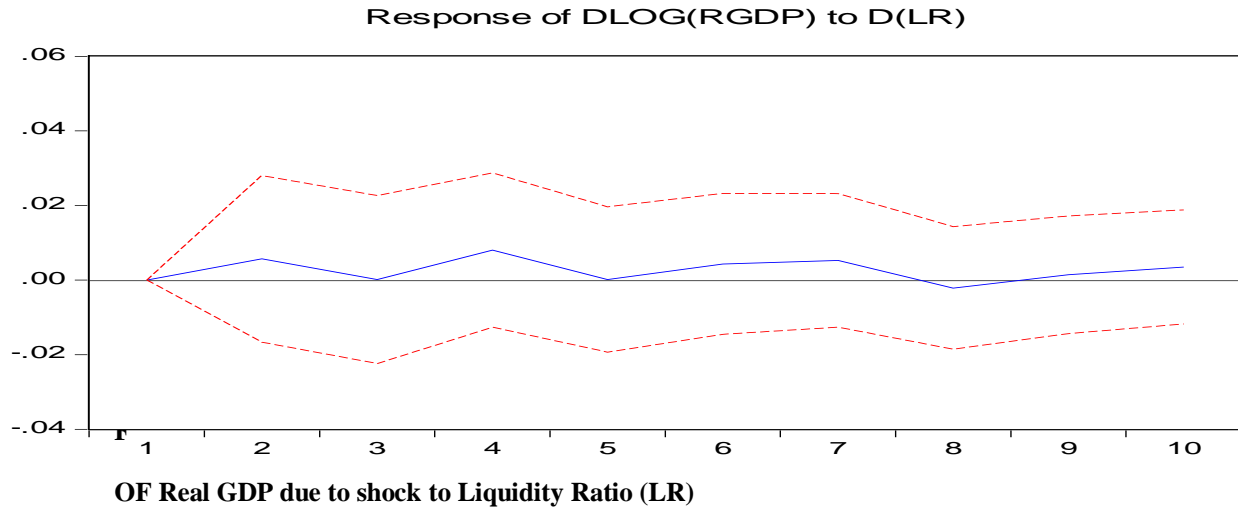
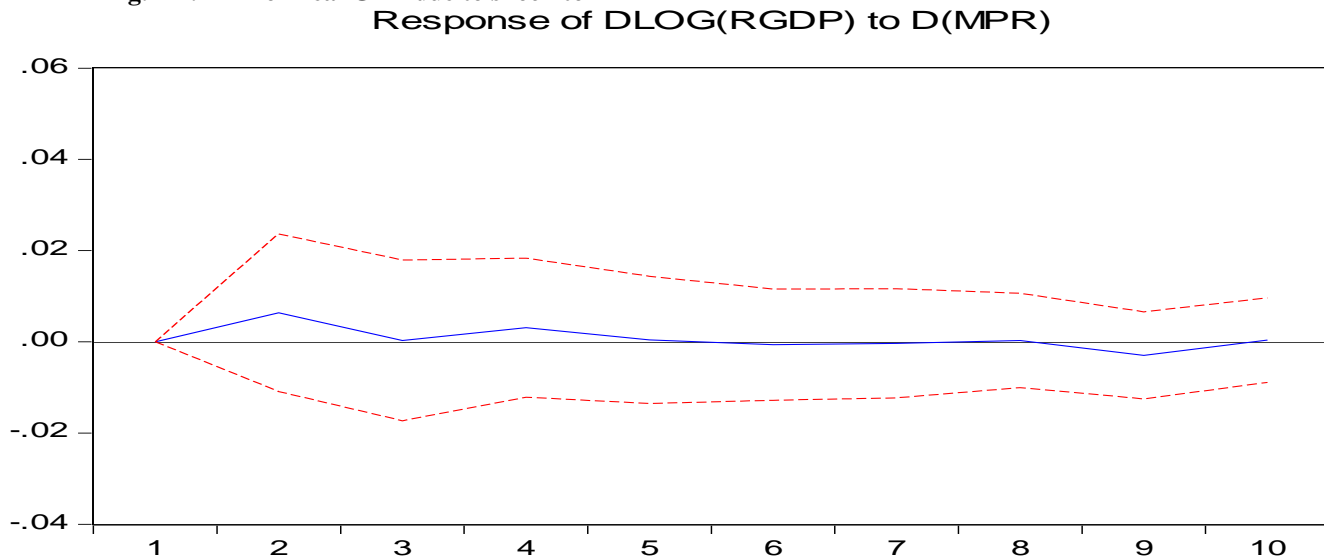


Fig. 4G above presents the Impulse Response Function of Real GDP to changes in Liquidity Ratio in the period of analysis. The IRF indicates that Real GDP responded more positively to change in Liquidity Ratio across the period. This is with the exception of the 3rd and 5th period when it died, and 8th period when it responded negatively, but remained positive from the 9th to the 10th period. The result implies that changes in Liquidity Ratio lead to increase in the growth of Real GDP in Nigeria.

Fig. 4H: IRF of Real GDP due to shock to MPR



The Impulse Response Function (IRF) of Fig. H shows that Real GDP growth responded positively to changes in MPR from period '1' to '2' but died in the 3rd period. It again responded positively in the 4th period but died from the 5th to the 8th period; became positive in the 9th period and finally died in the 10th period. The result therefore implies that MPR does not determine change in the growth of Real GDP in Nigeria in the period under study.

Fig. 4I: IRF of Real GDP due to shock to M2

The IRF in fig. 4I shows the response of Real GDP growth to changes in Broad Money Supply (M2). The result shows that Real GDP growth up to the 8th period before it became negative from the 9th period to the 10th. The result therefore implies changes in Broad Money Supply leads to decline in the growth of Real GDP on Nigeria.

4.4.4 Variance Decomposition (VDs)

Table 4.5: Variance Decomposition of Real GDP

Variance Decomposition of DLOG(RGDP):

Period	S.E.	DLOG(RGDP)	DLOG(M2)	D(CR)	D(LR)	D(MPR)
1	0.040045	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.046436	92.20830	4.124107	0.290512	1.492867	1.884215
3	0.049007	89.88139	5.846088	1.236555	1.341098	1.694869
4	0.049987	86.46158	5.751943	1.894160	3.881846	2.010475
5	0.052316	81.70298	5.305633	7.605205	3.544484	1.841696
6	0.054650	78.30133	4.875570	11.24837	3.873386	1.701342
7	0.055511	77.12374	4.762973	11.80997	4.650716	1.652597
8	0.056334	74.90564	4.637808	14.18957	4.659923	1.607060
9	0.057630	71.99903	4.611663	17.07339	4.512758	1.803165
10	0.058050	71.14262	4.751472	17.51288	4.812092	1.780928

Response of DLOG(RGDP) to DLOG(M2)

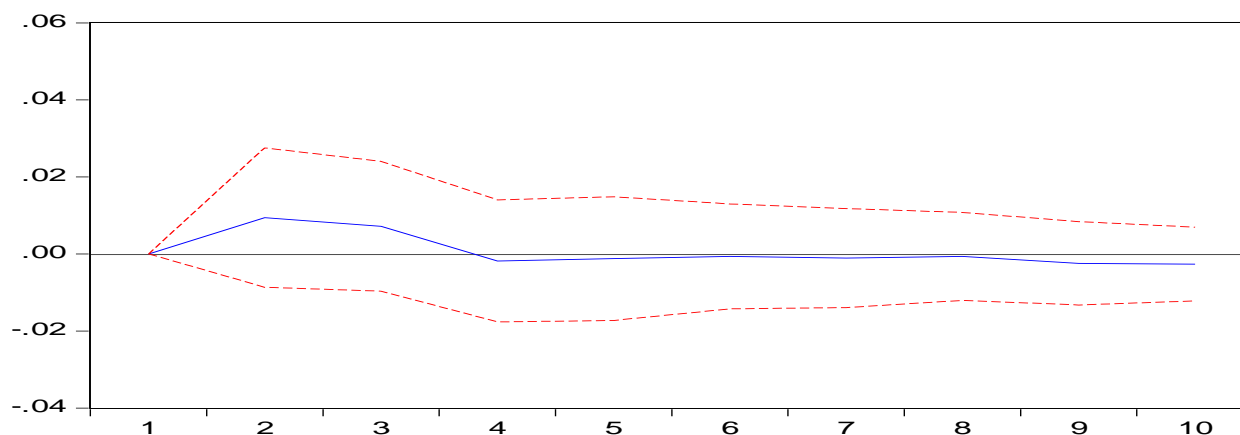


Table 4.5 above presents the Variance decomposition of Real GDP for 10 periods. The result shows changes in CRR contributed more than other variables to changes in growth of Real GDP. It accounts for 11.25% change in Real GDP in the 6th period; 14.2% in the 8th period; and 17.51% in 10th period. However, based on the Impulse Response Function result, CRR contributed to the decline of growth of Real GDP over the period.

Also, from the Variance Decomposition, changes in Liquidity Ratio accounts for 3.87% change in Real GDP in the 6th period; 4.66% in the 8th; and 4.81% in 10th. Although the contribution of Liquidity Ratio leads to positive increase in the growth of GDP, such contribution is of little magnitude drawing from the result of Impulse Response Function.

Changes in Broad Money Supply (M2) accounts for 4.88% changes in the growth of Real GDP in the 6th period; 4.64% in the 8th; and 4.75 in the 10th period. The contribution of M2 leads to slight decline in Real GDP as indicated by the result of IRF.

Change in MPR does not account for 1.7% change in the growth of Real GDP in 6th period; 1.6% in the 8th; and 1.78% in the 10th period. The result suggests that changes in MPR do not lead to changes in the growth of Real GDP in Nigeria in the period understudy as corroborated by the result of the Impulse Response Function.

4.4.5 Hypotheses Testing

The relevant hypotheses of this study were tested drawing from the result of the Impulse Response Functions (IRFs) as below.

Hypothesis I

H₀: Cash Reserve Ratio does not impact Economic Growth in Nigeria

H₁: Cash Reserve Ratio impacts Economic Growth in Nigeria

IRF in Figure ‘F’ shows that Real GDP responded negatively to shock to CRR in the period. This implies that changes in CRR leads to changes in Real GDP in the Nigeria. Based on this result therefore, we reject Ho and conclude that CRR impacts on Economic Growth in Nigeria. The constant varying of the CRR by the monetary authority over the years may have been responsibility for high lending rate in the economy which constitutes disincentive to investment and productivity in the country.

Hypothesis 2

H₀: Liquidity Ratio does not impact Economic Growth in Nigeria

H₁: Liquidity Ratio does not impact Economic Growth in Nigeria

From the IRF in figure ‘G’, Real GDP responded positively to shock to Liquidity Ratio in the period. The result suggests that changes in Liquidity ratio impacted on changes in Real GDP in the period. Therefore, we reject Ho and conclude that Liquidity Ratio impacts on Economic growth in Nigeria.

Hypothesis 3

H₀: Money Supply does not determine Economic Growth in Nigeria

H₁: Money Supply determines Economic Growth in Nigeria

The Impulse Response Function in Figure ‘H’ shows that Real GDP responded negatively to shock to Money Supply (M2) over the period. We therefore, reject the Null hypothesis and conclude that changes in Money Supply determine changes in Economic growth in Nigeria.

Hypothesis 4

H₀: Monetary Policy Rate does not determine Economic Growth in Nigeria

H₁: Monetary Policy determines Economic Growth in Nigeria

The IRF of ‘I’, Real GDP did not respond to shock to Monetary Policy Rate in the period of analysis. Based on this result, we do not reject the alternative hypothesis. Therefore, we conclude that MPR does not determine Economic growth in Nigeria.

4.4.6 Comparative Performance of the Monetary Policy Measures

The rigorous analyses of Impulse Response Function and Variance Decomposition about the behaviours of the relevant monetary policy variables considered in this study are comparatively summarized in Table 4.6 below.

Table 4.6: Performance of Monetary Policy Measures

Monetary Policy Measure	Impact on Real GDP
Cash Reserve Ratio (CRR)	Change in CRR leads to decline in Real GDP growth
Liquidity Ratio (LR)	Changes in LR leads to slight increase in Real GDP growth
Broad Money Supply (M2)	Changes in M2 leads to slight decline in Real GDP growth`
Monetary Policy Rate (MPR)	Changes in MPR does not have any impact on Real GDP growth

5.0 Summary, Conclusion and Recommendations

Summary

Nigeria’s economic growth is hinged on effective management of monetary policy measures for which the CBN is statutorily empowered. Although both micro and macro economic variables interact to determine the level of economic growth and development, how the major regulatory economic agency influences such variables as money supply, cash reserve ratio, and liquidity ration with fiscal discipline is important. Empirical review confirms the positive role of monetary policy measures in driving economic growth.

The study was guided by four research questions which were addressed with data, covering the period of investigation. By means of econometric analysis the relationship among the variables were tested. The study is a comparative measurement of the relationship between economic growth and selected monetary policy variables. The study was located in Banking and Finance theory for an explanation of the economic behavior characteristic of the Nigerian economy.

Conclusion

The overall objective of the study is conclusive within the context of methodology approach adopted. Growth of the Nigerian economy is not only a function of micro-economic variables, availability of operational infrastructure and level of investment among others are integral variables which play a critical role. This is the reason for considering the economy as a system. Economic elements are not operated in isolation, and this explains the conclusion from empirical testing that monetary policy is not a significant determinant of economic growth in Nigeria over the period of investigation.

Recommendations

Government's interference with the management and administration of the CBN processes should be discontinued. The CBN should be at liberty to apply its statutory powers to enforce, advise and shape the direction of the economy without being swayed by government. The government should also respond positively by supporting CBN's approach to drive economic growth. It is imperative for government to curtail undue excessive political interference in the CBN's powers. Furthermore, government should curtail excessive expenditure to reduce budgetary deficits. Measures ought to be devised to check inflationary pressure in the economy. Monetary policy objectives should be clear-cut without ambiguity, and open to periodic evaluation.

There are opportunities for investment growth in the informal sector. The sector should be explored, mapped and brought into the fold of the formal sector on a gradually on a phase by phase basis. Growth rate should be pursued with fiscal discipline and objectivity by the CBN and other economic agencies. The CBN's quarterly monitoring of monetary measures should be done with a sense of compliance and more efforts invested to track open market operations. Nonetheless, unethical practices among banks in the violation of CBN's orders should be sanctioned appropriately to serve as deterrent.

6.0 Contribution to Knowledge

This paper further emphasizes the significance of cash reserve ratio, liquidity ratio and money supply to the Nigerian economy. It also underscores the role of the CBN as a major regulator of both the economy and the financial sector in particular. The period 2009-2018 was singled out for comparative analysis making stand out as an economic epoch. Other researchers could choose another economic era to replicate this paper, using the same set of variables. The results from such a study can be compared with the findings in this paper. On that basis, some suggestive features and policy reflections could emerge. Significantly, the paper has empirically found a correlational relationship between monetary policy measures and economic growth in Nigeria during the period 2009-2018.

References

- Ademola, A. L. (2016) Manufacturing crisis and investment crisis: A study of Nigeria 2000 2015. *Development Horizon* 5 (2), 67-79
- Adofu, I., Taiga, U.U. &Tijani, Y. (2015) Manufacturing sector and economic growth in Nigeria (1990-2013).*Donnish Journal of Economics and International Finance* 1 (1), 1-6
- Agrawal, M. (2013) From market operations to capital development: Indian experience. *Journal of Stock Development* 4 (6)
- Akande, O.O. (2014) Entrepreneurial business orientation and economic survival of Nigerians. *International Review of Management and Business Research* 3 (2), 1254-1263
- Baden, S. (2019) Factorial issues in a comparative analysis of developed and developing economies. *Journal of Development Economic Review* 8 (3), 1121-1134
- Baghedo, M. & Stephen, E. T. (2014) Monetary policy and economic growth in Nigeria (1980 2011).*Asian Economic and Financial Review* 4 (1), 20-32
- Betagh, C. (2020) The World Bank economic measures of growth: How Africa fares. *Journal of African Regional Development* 6 (3), 434-445
- Chete, L. N., Adeoti, J.O., Adeyinka, F. M. & Ogundele, O. (2016) Industrial development and growth in Nigeria: Lessons and challenges. Working Paper No. 8
- Essien, B. S. (2014) The Nigerian business environment and growth constraints of micro and small-scale manufacturing industries. *American International Journal of Social Science* 3 (6)
- Gandirah, R. J. (2020) Alleviating poverty: What the banking sector can do. *Journal of Social Welfare Development* 6 (5), 137-148
- Gbenenye, E. M. (2014) Global economic meltdown: Implications to Nigeria. *International Journal of Economics, Business and Finance* 2 (4), 1-9
- Iyoha, F. O. & Ogun, T. P. (2005) The Nigerian stock market and future economic activity: Does the deregulation of the financial market make any difference? *Union Digest* 9 (1&2), 31 46
- Odiegwu, K. (2018) *The CBN and Nigeria's Economy*Ikeja, Forecast Partners Ltd

- Oguide, A. H. (2017) Infrastructural shortfalls and manufacturing crisis in Nigeria. A paper presentation. MAN Stakeholders' Forum, March 27
- Oloko, G. B. (2015) Budgetary analysis and policy direction in Nigeria's economy. *Journal of African Regional Development* 3 (4), 89-120
- Sulkah, G. (2019) Capital flight implications for developing nations. *International Journal of Financial Analysis* 8 (4)
- Todaro, M.P. & Smith, S. C. (2011) *Economic Development* 11th Edition, London, Addison Wesley
- United Nations Development Programme (2011) *Human Development Report* New York, Palgrave Macmillan
- Westley, P. (2016) From market operations to capital development: Indian experience. *Journal of Stock Development* 4 (6)
- World Bank (2012) World Bank Development Indicators. Washington, DC, World Bank
- World Bank Report 2005
- World Bank Report 2006