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Nexus of Monetary Policy and Per Capita Income in the Nigerian Economy: is the development sustainable?

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Abstract: *The fall of Nigerians standard of living despite regular management of monetary policy spurs the desire for this study. The study measures the nexus of monetary policies- Monetary Policy Rate (MPR), Cash Reserve Ratio (CRR) and Liquidity Ratio (LQR) and its prevailing sustainability on per capita income (PCI) development in the Nigerian economy. The study employed data sourced from the Central Bank of Nigeria over the period 1981-2016. The Augmented Dickey-Fuller (ADF) and Granger Causality tests were applied. The results of the ADF test show stationarity of the data at first levels differenced. The results of the Granger Causality test indicate a significant reinforcement between per capita income (PCI) and cash reserve ratio (CRR). The study concludes that CRR constitutes significant variables policy that sustains per capita income development. The study recommends the Central Bank of Nigeria for improving its policies to ensure the cash reserve ratio is stable enough to secure economic development and sustains Nigerians per capita income.*

Keywords: *Monetary Policy, ADF, Granger Causality & Per Capita Income.*

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I. Introduction

Economic policies are initiated to contend and control economic conditions. Such targets are properly and timely towards a given economy at a particular period to achieve the desired national macroeconomic set goals. Thus, an attempt to stimulate and maintain desirable aggregate objectives such as low inflation rate, full employment, and higher growth rate in per capita income as well as a balance of payment equilibrium required several policies. Monetary Policies are among those key tools employed to promote the growth rate and price stability as well as to improve living standards if properly and timely applied. Onoh (2007) identifies the main objectives of monetary policies is to achieve at least; full employment, stable price, the rapid growth of the national product, a favourable balance of payments, equitable income redistribution and to encourage balance population development.

The Nigerian Government has witnessed a series of monetary measures to proffer solutions for purchasing power, unemployment, exchange rate, and economic growth problems. The Federal government of Nigeria in an attempt to control these national instabilities established the Central Bank of Nigeria. This serves as a regulatory agency with the responsibility to collaborate with the central government to maintain a stable economic growth rate through the application of monetary policies. Bona (2018) reported that Godwin Emefile, the Governor CBN has recently reviewed the monetary policies; Monetary Policy Rate (MPR) at 14%, Cash Reserve Ratio (CRR) at 22.5% and Liquidity Ratio (LR) at 30% as a complementary to fiscal policy will sustain the Nigerian economic growth rate in per capita income.

To maintain a healthy economy the government has the power to tax. This gesture affects the disposable income of its citizens and corporation. If the economy is more liquid, more money will be injected into circulation, the marginal propensity to consume will increase, profits will rise, interest rates will fall and private investments stand to be stimulated. Assuming the quantity of money reduced with a low cash reserve rate, money income has the chance to rise less quickly. This suggests that consumers will pay less and funds for investment become difficult to acquire. This could also decrease aggregate investment. With a growth rate in per capita income which is one indicator of stability. The Central Bank of Nigeria and the Federal government must strike a healthy collaboration of monetary policies as regulations in the Nigerian economy. This study hypothesized that monetary policies did not significantly support per capita income in the Nigerian economy and sought to answer the question: To what measure do monetary policies significantly support per capita income in the Nigerian economy? To answer this question, the study aimed to examine the level of support of monetary policies on per capita income in the Nigerian economy

II. Literature Review

Experts of the monetary view have been in a debate on its efficacy of a better policy for regulations. The combination of both for refocusing an economic growth and combating distress makes it important. At the time of great depression, a good number of economists confirmed the two policy vehicles played complementary roles.

The classical school theorised that the level of money stock determines prices, wages, and employment. That a cut in the money wage rate will lead to more employment in enterprises. Keyne (1936) on the other hand had viewed that those variables like MPR, LR, CRR, can strongly be influenced directly and indirectly by the rate of interest. An increase in the money supply will lead to an increase in idle balance and further makes the interest rate fall. The purpose of investment will then increase. The reinforcement will raise the level of income and employment. The demand for both consumer and capital goods will also increase. And in the cause of satisfying the shortage in consumer and capital goods, more people will be employed. The classical school has argued on the source of money injection. Keynes identified source as an open market operation by the authorities, like in Nigeria is the Central Bank of Nigeria, (CBN). According to Keyne (1936), idle resources like cash reserve could be used to stabilize the economy. Keyne also suggests that public expenditure which could be captured on capital and current resuscitate demand and soaked of prices and will reduce unemployment in the short run. Keynes's model failed to wipe out unemployment and encourage investment in reality.

Milton Friedman (1968) has argued the Keynes model, stating that it is basically on quantity theory for money. It was not intended to offer an explanation or contribute to the theories of output, money, income or price levels. This implies that proper regulatory policies of monetary and fiscal can eschew GDP growth, price stability, stable exchange rate, full employment and increase per capita income in Nigeria.

The aim of monetary policy in Nigeria is for output growth and low inflation. In practice, the achievement of these goals is complicated by the legal, institutional and political framework in Nigeria. The lack of independence undermines the ability of the Central Bank of Nigeria (CBN) to carry out monetary operations in an appropriate manner. Neoclassical and Keynesian have differed on the effect and effectiveness of the monetary policy on influencing the real economy. They are seen to be no clear consensus on how monetary policy affects real economic variables (aggregate output or income, full employment). Though, both economic schools accept that monetary policy affects monetary variables (price levels, interest rates). The expansionary monetary policy seeks to increase the size of the money supply. The monetary authority regulates the supply on several tools and among; monetary policy rate (MPR), cash reserve ratio (CRR) and liquidity ratio (LR). The policy aimed at enhancing and stabilizing the exchange rate, interest rate and further strengthens the banking system. Nevertheless, a study conducted by Tabellini (1986), analysing the coordination between single monetary authorities in the context of game theory, show that policy coordination between the monetary authorities' increases the speed of convergence towards the steady states as compared to the outcome of the non-cooperative game model.

Empirical Review

Several studies have emanated in the discussion of monetary policy plays a sustainable role to improve per capita income in Nigeria. Though, conflict in findings assumed. According to Kareem, Aflobi, Raheem, and Bashir (2012) claimed the inflation rate; narrow money, broad money, government recurrent and capital expenditure as well as real GDP in Nigeria. The results showed a fluctuation in the trend of policy variables. The study by Chigbu and Njoku (2013) that employed VAR, Co-integration tools examined the rediscount rate, interest rate, liquidity rate, cooperate income tax and federal government budget as well as GDP in Nigeria. The results reveal no long-run relationship on strategic policies in Nigeria. Meanwhile, Ismail, Adegbemi, and Mariam (2013) employed the Error correction model to inspect their evaluation. The results reveal that the inflation rate, exchange rate, and external reserve are significant monetary policy instruments in Nigeria.

Chipote and Makhetha-Kosi (2014) also examine money supply, exchange rate, inflation rate and GDP in South Africa. The results after applying the Johansen co-integration and Error correction model reveal that money supply and exchange rate, as well as inflation, are insignificant instruments. Thus, the study recommends an increase in government expenditure to promote the economic growth rate. Again Ogar, Nkamare, and Emori (2014) applied OLS to evaluate exchange rate, money supply, GDP, government expenditure in Nigeria. The results assert that government revenue and expenditure as well as money supply and exchange rate positively impact the Nigerian economy.

However, Udude (2014) study shows no significant impact of monetary policy instruments in the Nigerian economy. Though, the study used Johansen co-integration, VECM to measure the impact of monetary policy regulation. Chinwudba, Akhor, and Akwaden (2015) utilize Vector Auto-Regressive to measure the responsiveness of GDP to the money supply, exchange rate and interest rate in Nigeria. The results show only the money supply was a significant instrument for the Nigerian growth rate.

Furthermore, Abdulazeez (2016) applied multiple regressions to examine the impact of monetary policies on money supply, interest rate, financial deepening and GDP in Nigeria. The results show the existence of a marginal impact on growth due to the change in monetary policies. Besides Adedoyin, Russell, Abiola, and Tony (2017) utilize Auto-Regressive Distributed Lag (ARDL) to seek the effect of monetary and fiscal policies on All Share Index as a measure of stock market performance in the growth process in Nigeria. The results show evidence of a long-run relationship between ASI, monetary and fiscal policies in Nigeria.

Methodology

In this study, the data is sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (various issues) over the period 1981 to 2016. The dependent variable in this study is per capita income, while the set of explanatory variables constitute monetary policy rate, cash reserve rate, and liquidity rate. Given the objective of evaluating the interrelationship between those set of variables, the functional model is therefore stated as follows:

$PCI = f(Monetary\ policies) - - - - - - - - - - -$ eq.1

Taking PCI to be Per Capita Income indicator and Monetary policies predictors such as monetary policy rate, cash reserve rate, liquidity rate of monetary policies, the study empirically estimate functional relationships as follows:

$$PCI = f((\mathrm{LQR}, \mathrm{CRR}, \mathrm{MPRt})) - - - - - - - - - - - - - - eq.2$$

Where
PCI = Per Capita Income over time,
LQR = Liquidity Rate over time, t
CRR = Cash Reserve Rate over time, t

MPR = Monetary Policy Rate over time, t

From the theoretical standpoint, this study is designed to prove the reality or otherwise of the social welfare policy using variables from the Nigerian economy.

Generally, the regression form, following Neter, Wasserman, and Kutner (1989), eqs. 1 and 2 can be rewritten in econometric form, thus:

$$PCI_t = \gamma_0 + \gamma_1 LQR + \gamma_2 CRR_t + \gamma_3 MPR_t + \varepsilon_t - - - - - eq.3$$

Where all the variables are as stated above and γ_0 = the constant (the value of the dependent variable when all the regressors are at zero); γ_1- γ_3 are coefficient of the independent variables and ε_t is the noise or error term.

The model's variables of this study consisted of monetary policy as a broad dependent variable that is being influenced in the per capita income, which serves as independent variables. The dependent variables of this study consist of the sustainable economic development of the Central Bank of Nigeria and serve as the proxy for per capita income. The independent variables of this study consist of liquidity ratio, cash reserve ratio, monetary policy rate of the Central Bank of Nigeria. They serve as the explanatory variables for the monetary policies.

The estimation procedure for this work followed Granger Causality, Inferences- Test of Hypothesis and Diagnostic/Reliability Tests considerations. These sets of tests are designed to validate the goodness of the data sets for Unit Root stationarity of the variables. The traditional Augmented Dickey and Fuller (ADF) (1976) test is adopted to show the unit root properties of the series following equation specified.

$$\Delta y_t = \beta_1 + \beta_2 t + \beta_3 t + \delta y_{t-1} + \alpha_i \sum_{t=1}^{m} \Delta y_{t-1} + \varepsilon_t - - - - - - - - - - - - - - eq.4$$

Where the test is for: $H_o = \delta = 0\ and\ H_1 = \delta < 0.$

Granger Causality Representation

After establishing a possible causal relationship through the granger causality model will be used to test the level of support emanating from the monetary policies. This will follow the form specified below:

For the Model PCI as the dependent variable:

$$\Delta \mathrm{PCI}_t = \pi_p + \sum_{i=1}^{k} \delta_{ip} \Delta \mathrm{PCI}_{t-i} + \sum_{i=1}^{k1} \tau_{ip} \Delta LQR_{t-i} + \sum_{i=1}^{k2} \theta_{ip} \Delta CRR_{t-i} + \sum_{i=1}^{k2} \theta_{ip} \Delta MPR_{t-i+} \varpi_{1p} LQR_{t-1} + \varpi_{2p} CRR_{t-1} + \varpi_{3p} MPR_{t-1} + \xi_{1t} - - - - - - eq.5$$

All the variables are discussed above with combined modeling of the casual coefficients in the granger causality framework.

The prior expectations from the model's tests of the hypotheses are given as follows:

Hypothesis One

$Ho_{1:}$ There are no significant causal relationships between the per capita income and monetary policies of Liquidity ratio, cash reserve ratio, and monetary policy rate in Nigeria.

Controlling for liquidity ratio, cash reserve ratio, monetary policy rate as the explanatory variables of interest, the model for the hypothesis is presented thus:

$$PCI_t = \gamma_0 + \gamma_1 LQR + \gamma_2 CRR_t + \gamma_3 MPR_t + \varepsilon_t - - - - - eq.6$$

Therefore the prior expectation with regards to this will be greater than zero; i.e. $\gamma_{1,}\gamma_{2,}\gamma_{3,} > 0$

III. Results Presentation and Discussions of Findings

Table 1: Data for Per Capita Income (PCI), Liquidity Ratio (LQR), Monetary Policy Rate (MPR), Cash Reserve Ratio (CRR) in the Nigerian economy for the period 1981-2016.

YEAR	PCI	LQR	MPR	CRR
1981	685.35	38.5	7.75	9.5
1982	692.62	40.5	10.25	10.7
1983	729.44	54.7	10	7.1
1984	789.3	65.1	12.25	4.7
1985	879.55	65	9.25	1.8
1986	872.87	36.4	12.5	1.7
1987	1270.27	46.5	17.5	1.4
1988	1635.61	45	17	2.1
1989	2460.59	40.3	25.5	2.9
1990	2955.29	44.3	25.5	2.9
1991	3367.27	38.6	20.22	2.9
1992	5542.18	29.1	29.8	4.4
1993	6960.2	42.2	36.1	6
1994	8974.9	48.5	20.2	5.7
1995	18595.84	33.1	20.2	5.8
1996	25277.37	43.1	19.12	7.5
1997	25603.91	40.2	17.86	7.8
1998	24198.89	46.8	17.98	8.3
1999	27757.66	61	21.3	11.7
2000	38555.41	64.1	21.33	9.8
2001	39131.13	52.9	25.98	10.8
2002	55400.52	52.5	20.59	10.6
2003	66245.95	50.9	19.58	10.5
2004	86219.74	50.5	18.91	9.1
2005	106055.7	50.2	17.78	8
2006	131191.7	55.7	17.33	7
2007	143022.4	48.8	16.46	4
2008	164055	44.3	15.26	3
2009	163443.7	30.7	19.55	1.3
2010	349791.7	30.4	15.74	1
2011	391174.5	42	16.75	8
2012	433955.8	49.7	16.54	12
2013	471456.1	63.2	17.01	12
2014	510805.4	38.3	15.88	20
2015	525316.4	42.3	16.96	20
2016	551511.4	46	17.09	22.5

Source: Extracted from Central Bank of Nigeria Statistical Bulletin (Various issues).

Data Analysis

ADF Unit Root Test Results

The Results of the Unit Root Test as Presented in Table 2 below

Table 2: ADF - Unit Root Test (Summary)

Differenced Variables	ADF - Test Statistic	Test of Critical Level			Order of Integration	Probability Value
		1%	5%	10%		
D(PCI)	-4.779108	-3.639407	-2.951125	-2.614300	1(1)	0.0005
D(LQR)	-6.514193	-3.639407	-2.951125	-2.614300	1(1)	0.0000
D(MPR)	-5.878042	-3.646342	-2.954021	-2.615817	1(1)	0.0000
D(CRR)	-4.531008	-3.639407	-2.951125	-2.614300	1(1)	0.0010

Extracted from E-Views 9

Test of Hypotheses

Test of hypothesis one

Ho_1: There is no significant unit root between per capita income and each of the monetary policy rate, cash reserve rate, liquidity rate in Nigeria.

Ha_1: There is a significant unit root between per capita income and each of the monetary policy rate, cash reserve rate, liquidity rate in Nigeria.

From the above results shown in table 2, the ADF test statistic of PCI **-4.779108**, LQR **-6.514193**, MPR **-5.878042**, CRR **-4.531008** are greater than -2.951125, -2.951125, -2.954021, and -2.951125 at 0.05 levels of significance respectively. Hence the null hypothesis that the variables have a unit root and non-stationary is rejected at the 0.05 level of significance. This is for the fact that the Augmented Dickey-Fuller test statistics are greater than its critical values, and again its probability value is less the 0.05 level of significance as stated above. Thus, we can say that there exists no unit root among the variables in their first difference.

Granger Causality Test Results

The results of the Granger Causality Test as Presented in Table 3 below

Table 3: Granger Causality Test (Summary)

GRANGER CAUSALITY TEST using LAG 1

Pairwise Granger Causality Tests
Date: 09/09/18 Time: 19:14
Sample: 1981 2016
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
CRR does not Granger Cause PCI	35	4.15588	**0.0498**
PCI does not Granger Cause CRR		14.8103	**0.0005**
LQR does not Granger Cause PCI	35	1.80018	0.1891
PCI does not Granger Cause LQR		0.01094	0.9173
MPR does not Granger Cause PCI	35	0.20005	0.6577
PCI does not Granger Cause MPR		0.46866	0.4985
LQR does not Granger Cause CRR	35	1.82963	0.1857
CRR does not Granger Cause LQR		3.50163	0.0705
MPR does not Granger Cause CRR	35	0.22116	0.6413
CRR does not Granger Cause MPR		0.91513	0.3459
MPR does not Granger Cause LQR	35	0.00629	0.9373
LQR does not Granger Cause MPR		1.11960	0.2979

Extracted from E-Views 9

Test of hypothesis two

Ho_2: There is no significant causal sustainable development between per capita income and each of the monetary policy rate, cash reserve rate, liquidity rate in the Nigerian economy.

Ha_2: There is a significant causal sustainable development between per capita income and each of the monetary policy rate, cash reserve rate, liquidity rate in the Nigerian economy.

This section empirically evaluates the impact of sustainable development in monetary policies on per capita income (PCI) in the Nigerian economy. From the above analysis, the Granger Causality results indicate bi-directional Causalities between Per Capita Income and Cash Reserve Ratio that do reinforce each other in the

growth process. This implies that an adjustment of the cash reserve ratio will translate to an equal reflection in per capita income growth. Hence both cash reserve ratio and per capita income move hand in hand. However, there is no evidence of sustainable development of monetary policy rate and liquidity rate on per capita income in the Nigerian economy. These results could be an indication that the policies are mismatched and poorly manage without feedback mechanisms. Furthermore, it could be that the Central Bank of Nigeria is not monitoring and ensuring a stable cash reserve ratio, especially from the unregulated money markets.

IV. Conclusion

In conclusion, this study examines the impact of monetary policy on the economic growth rate of the Nigerian economy. The variables used in the study are; monetary policy rate (MPR), cash reserve ratio (CRR), and liquidity ratio (LQR) as regulatory policies in Nigeria. The results of the Granger Causality tests indicate that per capita income and cash reserve ratio grows each other in Nigerian regulations. This implies that a higher cash reserve ratio will support the growth rate in per capita income. Again proper management of monetary policies may usher a sustainable development in the Nigerian per capita income.

Recommendations

In light of the above findings, the study recommends the following;

1. The monetary authorities should properly manage its policies with feedback mechanisms to set a limit on government borrowing to enable other individuals and private investors to have access to funding.
2. Central Bank of Nigeria (CBN) should ensure the cash reserve ratio is stable enough to secure economic development and sustains Nigerians per capita income.

References

[1]. Abdulazeez, M.N. (2016). Impact of Monetary on the Economy of Nigeria. *Pyrex Journal of Business and Finance Management research, vol. 2(10).*

[2]. Adedoyin, I.L., Russell, O.S., Abiola, A.B. and Tony, I.N. (2018). The effect of fiscal and monetary policies interaction on stock market performance: Evidence from Nigeria. *Future Business Journal, vol. 4(1).*

[3]. Bona, S. (2018). Godwin Emefile: Why Central Bank retained monetary policy rates? Retrieved from Today ng (April 10, 2018).

[4]. Chigbu, E.E. and Njoku, M. (2013). The Impact of Monetary and Fiscal Policies on Nigerian Economic Growth: 1990-2010. *European Journal of Business and Management, vol. 5(2).*

[5]. Chinwuba, O., Akhor, S.O. and Akwaden, S.T. (2015). Monetary Policy Innovations and Growth Rate of Output in Nigeria. *IIARD International Economics and Business Management, vol. 1(8).*

[6]. Chipote, P. and Makhetha-Kosi, P. (2014). Impact of Monetary Policy on Economic Growth: A Case Study of South Africa. *Mediterranean Journal of Social Sciences, vol. 5(15).*

[7]. Dickey, D.A and Fuller, W. A (1976) Distribution of Estimators for time series regression with a unit root. Journal of American Statistical Association, 74, 427-431.

[8]. Friedman, M. (1968) The Role of Monetary Policy. The American Economic Review, vol.58(1).

[9]. Ismail, O.F., Adegbemi, B.O.O. and Mariam, A.A. (2013). Asian Economic and Financial Review, vol. 3(5).

[10]. Kareem, R.O., Afolabi, A.J., Raheem, K.A. and Bashir, N.O. (2013). Analysis of Fiscal and Monetary Policies on Economic Growth: Evidence from Nigerian Democracy. *Current Research Journal of Economic Theory, vol. 5(1).*

[11]. Keyne, J.M. (1936) The General Theory of Employment, Interest, and Money. London: Palgrave Macmillan.

[12]. Neter, J., Wasseraman, N. and Kutner, M. H. (1989) Applied linear Regression Models, Richard D. IwinInc USA, 4th Ed.

[13]. Ogar, A., Nkamare, S.E., and Emori, E.G. (2014). Fiscal and Monetary Policy and its Effects on the Growth of Nigeria Economy. *European Journal of Business and Management, vol. 6(29).*

[14]. Onoh, J. K. (2007). Dimensions of Nigeria's Monetary & Fiscal Policies- Domestic and External. Astra Meridian Publishers, Nigeria.

[15]. Tabellini, G. (1986). Money, debt and deficits in a dynamic game. *Journal of Economic Dynamics and Control, Elsevier*.

[16]. Udude, C.C. (2014). Monetary policy and Economic growth in Nigeria. *Journal of Policy and Development Studies, vol. 9(1).*