An Empirical Analysis of Macroeconomic Factors Influencing the Effectiveness of Monetary Policies in Developing Countries: The Case of Nigeria

Adesola Adewale
School of Business, Westcliff University, Irvine, Califirnia
* E-mail of the corresponding author: a.adewale.112@westcliff.edu

Abstract
Monetary policies set the pace for the attainment of economic growth, price stability, and reduction in unemployment. The Central banks promote economic expansion through effective monetary policies in order to maintain price stability and sustain the Nigerian economy through its growth path. However, the effectiveness of monetary control and regulations is determined by some key macroeconomic factors that could impede or advance the success of macroeconomic targets and prospects. This literature review article evaluates the implications of these factors such as unemployment, prices changes and economic growth on the monetary policy effectiveness in the Nigerian economy. The study employs the ordinary least square multiple regression technique using data spanning from 1981 to 2018. The findings showed that inflation as a macroeconomic phenomenon significantly affects the effectiveness of monetary policy as measured by variations in the money supply. In all, the study concluded that monetary authorities should capture the implications of variations in outlined macroeconomic variables to ensure the potency of monetary policies in Nigeria.
Keywords: Macroeconomic Factors; Monetary Policies; Nigeria
DOI: 10.7176/JESD/13-18-04
Publication date: September 30th 2022

Introduction
Monetary theoretical postulations create insight in explaining the pathway of an economic growth blueprint and strategies of governments through the provision of awareness to the relative effectiveness of monetary policies in driving targeted economic expansion efforts of developing economies through well-defined government policies. One of such notable monetary theories that explains the position of monetary authorities in driving desired economic development plans is the theoretical underpinning of the classical economic doctrine as encapsulated in the renowned quantity theory of money (Santos, 2014). According to Santo (2014), the classical theory of money stands as the oldest surviving economic doctrines; the impetus of economic growth and price stability in developing economies is defined by the success of the monetary control medium as reflected by the major tenets of the quantity theory of money. It, thus, implies that monetary policies are conventionalisms that drive the direction of any given economy.

In the case of Nigeria, the Central Bank's monetary policy strategy is at the hub of the economic growth agenda of its government. Realizing this fact, Imoisi et al. (2014) highlighted that the Central Bank makes monetary policies in Nigeria with the intent of attaining sustainable economic growth and the control of the price level. However, the relative success and sustainability of monetary policy is affected by the variations of some key macro-economic factors such as unemployment, inflation and increase in aggregate supply. For inflation, as an essential macroeconomic factor, there is a consensus among scholars that it brings positive changes in economic growth and, thus, affects the effectiveness of the monetary policy of output expansion, especially in cases of high inflation (Bruno and Easterly, 2003). Moreover, as pointed out by Fischer (2002), inflation distorts efforts to ensure the effective allocation of resources as it blurs the allocative signals of the price mechanism which might lead to a distortion of efficient economic decision-making.

To Execute monetary policy can be daunting given due to the dynamic nature of key macroeconomic variables such as inflation, unemployment and economic growth. Thus, any effort to steer the Nigerian economy towards desired growth and stable price, requires that due cognizance is attributed to the implications on inflation, unemployment and growth, which constitutes the major goals of macro-economics. This, indeed, does not come as a surprise because in Nigeria, like in other developing economies in general, the major objectives of any monetary policy are often focused on price stability and growth. This enables the central bank of Nigeria (CBN) to recognize the implications of rising unemployment which could mitigate efforts to sustain economic growth in aggregate supply.

From the start, it becomes imperative to evaluate the relative implications of major macroeconomic goals on monetary policies effectiveness appraised by the level of economic growth and price stabilization efforts realized in developing countries. Finally, this study is circumscribed to a pragmatic literature review which will evaluate the implications of macroeconomic variables that determine the effectiveness of monetary policies and

guidelines in Nigeria

Literature Review
Conceptual Review
Monetary policy according to Dwivedi (2005), basically are series of actions administered by monetary authorities, precisely the Central Bank, to ensure the management of money supply in the general population as well as the administration of financial resources of deposit money sets in respect to credit allocation with the intent of achieving macroeconomic goals. Monetary policies are quite instrumental in regulating money supply in an economy through the activities of the monetary authorities with the attainment of economic growth in focus. Governments' efforts to control the flow of money are because any monetary phenomena are considered instrumental in promoting inflation. Hence, monetary policies consist of deliberate government actions intended to effect desired changes in the financial sector. Noteworthy is the fact that the effectiveness of monetary policy is more optimal in an economy that is characterized by well-structured financial markets as it is in developed countries (Ilegbinosa et al., 2012).

Furthermore, Adegbite and Alabi (2013) stated that monetary policies in the modern money-based economy are a vital means of maintaining exchange rate stability and domestic price which is considered critical for the development of any economy. Also, monetary policies might be either deflationary or inflationary as the case maybe. According to the Amadeo (2020), Nigeria uses an inflationary monetary policy to stimulate the economy through money supply expansion and interest rate reduction. This approach constitutes a signal for increase in output. On the other hand, the central bank attempts to reduce the demand for money, and thus, reduce the pace of economic expansion by increasing the interest rate, which is referred to as a deflationary monetary policy. The processes of reducing the productive activities of an economy involves the use of contractionary monetary policy in a manner that reduces the persistent rise in the price level. On the other hand, to reduce the rate of unemployment and recession an expansionary monetary policy can be used (Shane Hall, 2010).

The challenges of monetary policies rest on the shoulders of financial authorities who ensure the effective control of all the monetary phenomenon in Nigeria. Moreover, the performance of the monetary policies have been improving as inflation has been on the decline in the recent past (Plecher, 2020). The figure (1) below gives credence to this assertion
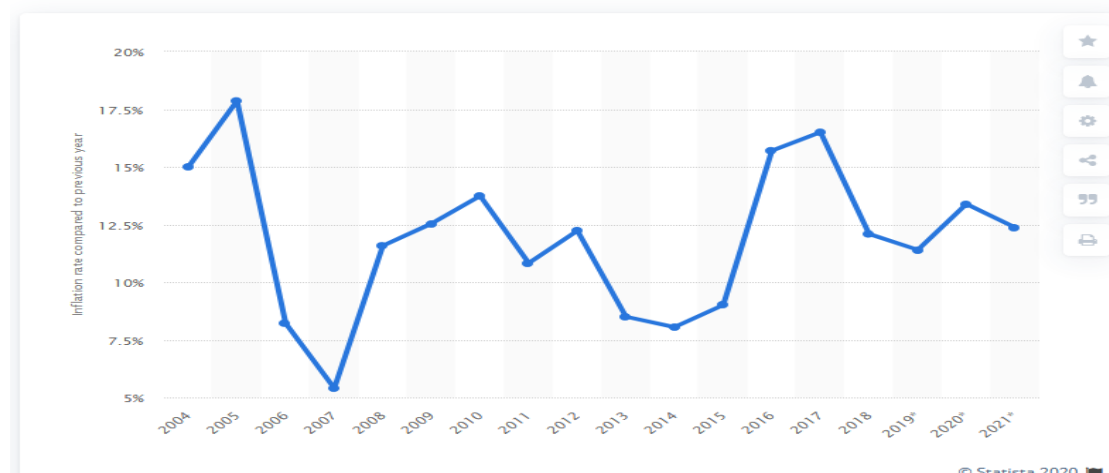
The Concept of Economic Growth
The effectiveness of monetary policy is often measured by its impact on the economy. The concept of economic growth refers to a rise in aggregate output, service and employment with the aim of ensuring the increase in output and improvement in the welfare of the citizenry (Ogbudu & Tobira, 2012). For Hardwick et al. (1994) & Hinmikaiye et al (2022), economic growth is explained so was it's relationship with different sectors of the economy, For Hardwick et al. (1994), economic growth is an upsurge in the capacity of the economy to rise its productive activities as indicated by a sustainable increase in the real national income. The pursuit of economic growth is often the focus of most policies of governments; thus, it has become an important issue in the field of economics as it is considered crucial in the attainment of societal welfare. To achieve this growth, monetary policies are often implemented in order to achieve set financial goals by both developing and developed countries of the world and macroeconomic productivity levels are often directed by the government (Ehinmilorin et. al., 2021).

Theoretical Basis for the Study
This study is based on the monetarist quantity theory of money. The Monetarists support the idea that monetary policy is more influential in determining the growth of an economy through its impact on the output and prices. It is noted in the quantity theory of money that an increase in the stock of money through the monetary policies of the central bank determines the extent of economic development. Thus, any variations in the economy in terms of growth is a monetary phenomenon (Adefeso & Mobolaji, 2010).

Methodology
Research Design
To conduct an empirical analysis of the effect macro-economic factors as identified on impacting the monetary policy's effectiveness of developing economies, with a focus in Nigeria, this study will use secondary data collected from the Central Bank statistical bulletin as well as data evaluated through the Unit Root, Co integration and the multiple regression analysis to establish empirical evidence to justify the conclusions of the study.

Data Sources
The major source of data was collected from the Central Bank of Nigeria's online data base, between the periods of 1981 to 2018. The choice of data period is to ensure that sufficient evidence is provided to explain the variations and relationship in the outlined variables under consideration.

Data Required
Yearly time series data has been used to draw the conclusions of this analysis due to the fact that it provides adequate empirical evidence considering the time lag variations for the variables adopted. The choice of the data requirement is to reflect annual changes in the variables and to reveal the relationships that exist between them.

Analytical Technique
Quantitative research technique is considered appropriate for the study. The Augmented Dickey Fuller (ADF) unit root test was used to test the stationarity of all data. In statistics and econometrics, the ADF tests the null hypothesis that a unit root is present in a time series sample.

Johansson cointegration was used to test for long run relationship among variables while the Granger Causality test was used to determine the direction of causality between variables. In statistics, the Johansen test, named after Søren Johansen, is a procedure for testing cointegration of several, say k, I(1) time series, Johansen, Søren (1991). The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another, first proposed in 1969, Granger, C. W. J. (1969)

Also, the multiple regression models are were adopted to determine the theoretical relationships among the variables. According to Kenton (2020), multiple regression is a statistical technique that employs several explanatory variables to make predictions about the outcome of a response variable. Multiple regression provides a model for the linear relationship between two or more variables, where one variable is the dependent variable and the other is the independent variable. In a multiple regression model, the changes in the dependent variable is explained by the variations in the independent variables.

Most researchers consider this technique adequate for studies of this nature, because it provides researchers with the statistical technique to establish the relationship between variables and to explain how the changes between these variables provides empirical justification of economic theory in explaining economic phenomenon. This method reveals the association between multiple predictor variables and a single outcome variable (Mike, 2017).

Adopting the multiple regression technique for this study, the empirical analysis conducted provided insights and constituted a means of policy evaluation and implementation of monetary policy effectiveness in Nigeria.

Model Specification
To determine the impact of macroeconomic factors as highlighted on the effectiveness of the monetary policy in Nigeria, the composition of the model will be split into two models, each model establishing an empirical connection between the relationships expressed in the model. Specifically, the effectiveness of monetary policies is evaluated based on their impact on economic growth and price stability. As noted by Dr O.J. Nnanna, the former Director of Research of the Central Bank of Nigeria, economic growth and price stability is the major focus of a monetary policy for developing economies in general and the Nigerian economy, in particular. Thus, the first model is specified to ascertain the potency of monetary policy on economic growth as expressed below: Equation i shows indicates that real gross domestic product is a function of money supply, interest rate and rediscount rate.

i.   (RGDP = f (MS, INT, RDR) t)

Where:

RGDP: Refers to real gross domestic product

MS: Money supply

INT: Interest rate which measures the prime lending rate

RDR: Rediscount Rate

Equation (i) can be written in its structural functional form as:

ii.   (RGDPt = β0 + β1(MS)t + β2(INT)t + β3(RDR)t + εt)

Moreover, for Nigeria to produce the most suitable RGDP coefficient with respect to the independent variables, the model has to be transformed into equation (ii) in a log-log equation form as shown in the equation below:

iii.   (InRGDP=β0+ β0 + β1In (MS)t + β2In (INT)t + β3In (RDR)t + εt)

Where: 'ln' represents the natural log.

The justification for the development (log-log transformation) is that, it is helpful to achieve a better fit for the study is obtained, and to ensure that the result is interpreted as elasticity (Gujarati & Porter, 2009).

To evaluate the impact of macroeconomic factor on the monetary policy effectiveness, the following model is used:

iv.   (MSt = f (UNE, RGDP, INF) t)

Expressing equation four in its functional form results in the equation below:

v.   (MSt = β0 + β4(UNE)t + β5(RGDP)t + β6(INF)t + εt)

Where:

UNE; refers to the rate of unemployment

RGDP is same as above.

INF: inflation proxy by consumer price index

The equation indicates that money supply is influenced by changes in the rate of unemployment, real gross domestic product and the rate of inflation.

Expressing equation (V) in their log form as justified above gives equation six below:

vi.   (InMS=β0+ β0 + β5In (UNE) t + β6In (RGDP)t + β7In (INF)t+ εt)

From the model presented in (i), the effect of the monetary policy indicators on the Nigerian economy as measured by the GDP, it can be seen that the CBN plays two broad roles categorized under growth and stabilization function; thus, the empirical appraisal of the role of monetary policy on the economy will be evaluated by estimating the equation. The value of MS is expected to positively impact the economy such that a rise in the total money in circulation will result in an increase in the output level. However, an increase in the interest rate or rediscount rate lowers banks' lending and curtails investment, which has a downward effect on the economy.

The second empirical model (equation vi) captures the possible impact of macroeconomic factors on monetary policy as measured by the money supply. This study adopts broad money supply (M2) as a means of measuring money supply because it is the most acceptable definition of money supply in Nigeria (Afolabi, 1999).

Empirical Findings and Discussion of Results

The effect of macroeconomic factors on the monetary policy effectiveness will be ascertained through the statistical procedure in the study that involves the description of variables, test of Unit Root, cointegration, Granger causality and the regression analysis.

Variable Description
Table 1
Descriptive statistics of variables in the study model

	RGDP01	INT01	INF01	RDR01	UNE01	MS01
Mean	18.12474	17.58605	49.85666	15.34421	4.046632	5153.387
Median	2.810000	17.54000	27.06562	14.00000	3.760000	753.7050
Maximum	195.0900	29.80000	214.2321	26.09000	8.389000	25079.72
Minimum	0.110000	7.750000	0.408730	6.000000	2.893000	14.47000
Std. Dev.	48.83027	4.627242	58.49149	4.855569	1.188946	7536.495
Skewness	3.090025	0.198024	1.200267	0.636110	2.914674	1.337830
Kurtosis	10.74259	3.669657	3.476854	3.236247	10.44499	3.431295
Jarque-Bera	155.3894	0.958385	9.484094	2.651063	141.5645	11.62986
Probability	0.000000	0.619283	0.008721	0.265662	0.000000	0.002983

	RGDP01	INT01	INF01	RDR01	UNE01	MS01
Sum	688.7400	668.2700	1894.553	583.0800	153.7720	195828.7
Sum Sq. Dev.	88222.63	792.2205	126586.4	872.3323	52.30293	2.10E+09
Observations	38	38	38	38	38	38

Source: Authors Computation Uisng Eviews 9

Table 1 shows the unique features of the data used for the study. Table 1 provides the mean values of the variables. As indicated, the interest rate has been growing significantly over time as indicated by the mean value of 49.85666 which is the highest among the variables. The maximum values of the variables as shown captures money supply with a value of 25079.72 as the highest with a minimum value of 14.47000. The standard deviation depicts the level of volatility. The money supply maintained a standard deviation of 7536.762, which is higher than the value of 65.52031 for consumer price index. This was the most volatile among the variables.

Test of Stationarity, The Unit Root
The Unit root test adopted for the study is the Augmented Dickey Fuller test. The result is presented in Table 2.
Table 2
Unit Test Result

	At Level		At First Difference		At Second Difference		
Variable	ADF-t stat	CV at 5%	ADF-t stat	CV at 5%	ADF-t stat	CV at 5%	Decision
INF	4.81672	2.9484					**S(0)**
MS	5.42589	2.97185					**S(0)**
RDR	-3.035984	-2.991878					**S(0)**
UNE	-3.428971	-2.960411					**S(0)**
INT			-5.426332	2.98452	6.65766	2.95402	**S(2)**
RGDP							**S(1)**

Source Authors Computation Using: Eviews 9

Table 3 shows that INF and MS, RDR, UNE are at a stationary level. RGDP was not stationary and needed to be differenced to make it stationary. After the first difference, it became stationary. The INT became stationary after the second difference; thus, it became a fit for the study.

Johansen co-integration test
The test of cointegration proves the long run relationships among the variables and the outcome of the test for cointegration using the Johansen integration test. The result of the test will provide insight regarding the variables adopted for the study to ascertain if there is a long run relationship between them.
Table 3
Johensen Test Result

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.782441	108.2971	88.8038	0.001
At most 1	0.523321	53.38684	63.8761	0.2766
At most 2	0.294242	26.71402	42.91525	0.6975
At most 3	0.197714	14.16866	25.87211	0.6437
At most 4	0.159101	6.238229	12.51798	0.4306
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Authors Computation Using Eviews 9…

As displayed in Table 3, the null hypothesis of no cointegration was rejected by the trace statistics method. This indicates that there is a cointegrating equation. The implication is that there is a long-term relationship among the variables at 5% level of significance. This means the variables are a fit for the analysis, and the result of the regression will provide a reliable means of explaining how macroeconomic factors in Nigeria actually affect the effectiveness of the monetary policy in Nigeria.

www.iiste.org

IISTE

The Granger Causality Test

The Granger causality test was applied to investigate the causal influence between money supply and macro-economic variables in Nigeria.

Table 4

Granger Causality Test Result

Pairwise Granger Causality Tests			
Date: 07/15/20 Time: 10:08			
Sample: 1981 2018			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
MS01 does not Granger Cause RGDP01	36	4.40675	0.0207
RGDP01 does not Granger Cause MS01		13.5839	6.E-05
INF01 does not Granger Cause RGDP01	36	4.90510	0.0141
RGDP01 does not Granger Cause INF01		15.3169	2.E-05
UNE01 does not Granger Cause RGDP01	36	13.9322	5.E-05
RGDP01 does not Granger Cause UNE01		10.5054	0.0003
INF01 does not Granger Cause MS01	36	6.55764	0.0042
MS01 does not Granger Cause INF01		2.21446	0.1262
UNE01 does not Granger Cause MS01	36	3.95451	0.0295
MS01 does not Granger Cause UNE01		6.61451	0.0041
UNE01 does not Granger Cause INF01	36	12.7902	9.E-05
INF01 does not Granger Cause UNE01		8.72412	0.0010

Source: Authors Computation Using Eview 9

The result of the test, shown in Table x, demonstrates that the null hypothesis of no causality is rejected for the variables. This implies that causality exist between the variables of note such as money supply and unemployment, inflation and output growth. The causal relationship for inflation and inflation is unidirectional. For money supply and unemployment, the relationship is bi-directional**.**

Regression Result for Model 1

Dependent Variable: LOG(MS01)
Method: Least Squares
Date: 07/15/20   Time: 10:18
Sample: 1981 2018
Included observations: 38

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.490908	2.224580	-1.569243	0.1259
LOG(MS01)	0.148784	0.102902	3.445875	0.0074
LOG(INT01)	-1.139368	1.031847	-1.104203	0.2773
LOG(RDR01)	-2.593938	1.048599	2.473718	0.0185

R-squared	0.857253	Mean dependent var	1.213668
Adjusted R-squared	0.800540	S.D. dependent var	1.565765
S.E. of regression	1.309508	Akaike info criterion	3.476480
Sum squared resid	58.30356	Schwarz criterion	3.648858
Log likelihood	-62.05313	Hannan-Quinn criter.	3.537811
F-statistic	6.299316	Durbin-Watson stat	1.018401
Prob(F-statistic)	0.001624		

Source: Authors Computation Using Eviews 9

The result of the regression speaks volumes on the relationship between money supply, interest rate and the rediscount rate on gross domestic product in Nigeria for the period under review. The long run value of money supply satisfies what the quantity theory of money stipulates regarding how monetary policy influences economic activities in Nigeria. Conforming to appropriate expectations, money supply maintains a positive relationship with GDP. The magnitude of the coefficient shows that a 10% increase in money supply will increase the RGDP by approximately 1.4% at 0.05 level of significance. The t value of 3.445875 shows that there is a significant relationship between money supply and real gross domestic product in the long-term.

That apart the long run impact of interest rate on inflation conforms to the theoretical expectation as it maintains a positive sign. However, the T values of 0.2773 indicates an insignificant relationship between the interest rate and economic growth. The adjusted R-squared values of 0.800540 indicates that approximately 80% of the change in real gross domestic product is explained by the independent variables adopted in the study, and they jointly have significant impact on the dependent variable at 0.05 level of significance as indicated by the F-6.299316. However, the Durbin Watson value of 1.018401 shows there is the presence of a weak serial correlation.

Table X

Regression Result for Model 2

Dependent Variable: LOG(MS01)

Method: Least Squares

Date: 07/15/20   Time: 10:18

Sample: 1981 2018

Included observations: 38

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.569864	0.676240	3.800222	0.0006
LOG(UNE01)	0.601389	0.552897	1.087706	0.2844
LOG(INF01)	1.204404	0.044064	27.33294	0.0000
LOG(RGDP01)	-0.028745	0.076808	-0.374247	0.7105

R-squared	0.969211	Mean dependent var	6.547237
Adjusted R-squared	0.966495	S.D. dependent var	2.555846
S.E. of regression	0.467834	Akaike info criterion	1.417894
Sum squared resid	7.441535	Schwarz criterion	1.590272
Log likelihood	-22.93999	Hannan-Quinn criter.	1.479225
F-statistic	356.7669	Durbin-Watson stat	0.202483
Prob(F-statistic)	0.000000		

Source: Authors Computation Using Eviews 9

The second model multiple regression result is depicted in the table above. The result shows that unemployment has the right sign hence conforming to theoretical expectations as regards the sign. The coefficient value of 0.601389 indicates an approximately 6% increase in money supply of the rate of inflation increases by 10%, although the T- value indicates that this impact is insignificant at 5% level of significance.

For inflation, the value of 1.204404 shows that a 10% increase in inflation will result in a 1% increase in the money supply. The T- value shows that this relationship is significant at 0.05%. However, real GDP fails to conform to expected theoretical postulations as depicted in sign of the coefficient, and at 5% level of significance, the relationship is insignificant. Moreover, the Durbin Watson values show that 96% of the variations in the money supply is explained by the macro-economic variables.

Discussion of Findings

Monetary policies are quite instrumental in facilitating the implementation of growth plans and prospects of developing economies in general, particularly in Nigeria. The result of the empirical analysis conducted gives Moreover, monetary policy instruments of the CBN promote improvement in national economic performance, reduction in unemployment and improvement in the standard of living. Broad money supply variations through the CBN monetary policy initiative drive growth in economic output. This result conforms to the theoretical underpinning of the monetarist quantity theory, which argues that monetary authorities influence the macro economy in Nigeria.

The result of the second model creates insight. The activities of CBN in achieving monetary policy objectives reflect on the variations of broad money supply in Nigeria. Macroeconomic factors such as unemployment, interest rate and inflations, the result shows that unemployment does not determine the level of money supply in any significant way. Furthermore, the findings show that the effectiveness of money supply is significantly affected by variations in the price level. Consistent increase in the general price level greatly affects monetary policy goals of price stability or real growth of the economy and the actual value of money. The result, as indicated, shows that the value of money supply was meaningfully affected by the inflation levels in Nigeria.

Conclusion

Economic growth prospects, poverty reduction and price stability are a major target of monetary policy. The activities of the central bank often target growth objectives and price stabilization goals. Through effective monetary policies, these macroeconomic goals are not mere mirage. However, the effectiveness of monetary policies in democratic developing economies like Nigeria is significantly affected by variations in

unemployment levels, the rate of inflation and the growth of the economy. The study has shown that money supply has a positive impact on the economic performance in Nigeria. Thus, the impact of inflation on the broad money supply in Nigeria determines the effectiveness of monetary policy as determined by the economic growth. Although the rate of unemployment is insignificant in determining the potency of monetary policy, it has a positive impact. Inflation as a macroeconomic factor suffices more prominently in shaping the course of monetary policy in Nigeria.

References

Adegbite, T.A, & Alabi, W.O. (2013). Monetary Policy and Economic Growth: The Nigerian Experience (1970-2010). Prime Journal of Business Administration and Management, 3(1), 822-833. Retrieved 16July,2020, from http://www.primejournal.org/BAM

Bruno, M, & Easterly, W. (1998). Inflation crisis and long-run growth. Journal of Monetary Economics, 41(1), 3-26. Retrieved 16 July, 2020, from https://doi.org/10.1016/S0304-3932(97)00063-9

Ehinmilorin, Bamidele-Sadiq, Udonwa & Ekpeno (2021). Fiscal Policy and Poverty Reduction: The Nigerian Perspective. *International Journal of Business and Social Science*. 12 (4). doi:10.30845/ijbss.v12n4p7

Fischer, S. (2002). "The Role of Macroeconomic Factors in Growth," Journal of Monetary Economics, Vol. 32, pp. 485-512.

Gujarati, D & Porter, D (2009). Basic Econometrics. (2 ed.). America: MCGrawHill.

Granger, C. W. J. (1969). "Investigating Causal Relations by Econometric Models and Cross-spectral Methods". *Econometrica*. **37** (3): 424–438. doi:10.2307/1912791. JSTOR 1912791

Hardwick, P., Khan, B., & Langmead, J., (1994). An introduction to modern economics, (4th ed.) (England: Longmam Group Ltd.

Hinmikaiye, A, Adewale, A & Aladenika, B. (2022). The Impact of Web 3 on Digital Marketing Strategies of Retail Businesses in the United States. Strategic Survey. 10.7176/IAGS/95-04

Imoisi, A. I., Moses, O. V., & Opara, G. I. (2014). Monetary policy and its impact on selected macroeconomic variables in the Nigerian economy (1970-2012). International Research journal of Finance and Economics, 8-17.

Johansen, Søren (1991). "Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models". *Econometrica*. **59** (6): 1551–1580. JSTOR 2938278

Kaufman, G. (1978): Money, financial system and the economy, Chicago College Publishing Co.

Keynes, J., Treatise on money (London: MacMillan, 1930).

Mike , A.L.L.E.N. (2017). Research Methods: Multiple Regression. Retrieved 30 July, 2020, from http://methods.sagepub.com/Reference//the-sage-encyclopedia-of-communication-research-methods/i9174.xml#:~:text=Researchers%20use%20multiple%20regression%20as,of%20explaining%20relationships%20between%20variables.&text=Unlike%20correlation%2C%20which%20shows%20the,for%20prediction%20and%20causal%20inference

Ogbulu, O.M. & Tobira, L.L, (2012): "Budgetary Operations and Economic Growth: The Nigerian Perspective." British Journal of Arts and Social Sciences, 4(2), 180- 194.

Okafor, P.N., (2009). "Monetary Framework in Nigeria: Issues and Challenges," CBN Economic and Financial Review, 33(2).

Rois, M.C, Mcconnell, C.R & Brue, S.L. (2013). Economics: Principles, Problems, and Policies. (5th ed.). New York: McGraw-Hill.

Santo, R. (2012). The Quantity Theory of Money and Its Long-Run Implications Empirical Evidence from Nigeria. European Scientific Journal, 1(2), 5.

Uchendu, O.A.," Monetary Policy in Nigeria," CBN Economic and Financial Review 33 (2), (2009): 11- 18.

Ufoeze et al. (2018). Effect of Monetary Policy on Economic Growth In Nigeria: An Empirical Investigation. Annals of Spiru Haret University, 24(1), 2393-1975.

Will, K. (2020). Investopedia. Retrieved 30 July, 2020, from https://www.investopedia.com/terms/m/mlr.asp
.