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Effect of Money Supply on Economic Growth: A Comparative Study of Nigeria and Ghana

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Abstract

The effect of money supply in enhancing economic growth in Nigeria and Ghana is investigated in this study. The major objectives of the study are to establish the joint and individual influences of money supply mechanisms on economic growth in Nigeria and Ghana. The study employs data from 2009 to 2018 and uses Ordinary Least Squares regression technique for analysis of the data. The findings reveal that broad money supply (M2) has an insignificant negative influence on RGDP in Nigeria, but in Ghana the impact is significant and positive. Broad money supply (M3) exerts insignificant positive influence on RGDP in Nigeria, but significant negative impact on RGDP in Ghana while credit to private sectors (CPS) has insignificant positive influence on RGDP in both Nigeria and Ghana. The study among others suggests that the Monetary Authorities in the two countries should come up with monetary policy strategies that will help drive the economy better and such policies should consider M2 and CPS more as their contributions are necessary for economic expansion that lead to more output and employment.

Keywords: money supply, broad money, credit to private sectors, economic growth, policy

JEL Classifications: E51, E52, F43

1. Introduction

Money supply is a basic macroeconomic element that influences economic growth in an economy by ensuring effective running of economic activities in both public and private sectors through liquidity availability. Through money supply, the private sectors are able to obtain credits to carry on businesses at a price being referred to as interest rate. Money supply is a monetary policy tool that is highly essential in boosting economic growth of a nation. On the other hand monetary policy is an important instrument used by Central Banks of countries to maintain economic stability and promote economic growth (Prasert, Kanchana, Chukiat & Monekeo, 2015). Nnanna (2001) defines monetary policy as a tool at the disposal of the Monetary Authorities to influence the availability and cost of credit/money with the ultimate aim of achieving price stability. However, Monetary Authorities especially in the developing countries have a dual role of ensuring price stability and sustainable growth in an economy by employing instruments of monetary policy (Njimanted, Akume & Mukete, 2016). On the other hand economic growth shows the percentage increase in GDP and is measured based on the fixed and the market prices

The monetarists believe that money supply is a tool that gives boost to economic growth based on unexpected increase in money stock (Jawaid, Qadri & Ali, 2011) while the Keynesians argue that money supply has a limited influence on economic growth (Twinoburyo & Odhiambo, 2017). Scholars such as (Chipote & Palesa, 2014; Kamaan, 2014; Inam & Ime, 2017) found that money supply exerts insignificant influence on economic growth thereby substantiating the Keynesian view. However, several other studies have established that money supply enhances economic growth of a nation (Nouri & Samimi, 2011; Onyeiwu, 2012; Havi & Enu, 2014Osasohan, 2014; Prasert et al., 2015; Mohamed Aslam, 2016) among others.

Based on the above background, the study seeks to examine the role of money supply in enhancing economic growth in Nigeria and Ghana between the periods from 2009 to 2018. The components of money supply in Nigeria and Ghana this study employs to determine the real effect of money supply on economic growth in both countries include: money supply (M2), money supply (M3) and credit to private sectors (CPS) while the economic growth is measured by the

countries' real GDP. M2 in Nigeria and Ghana is the broad money supply which measures the total volume of money supply circulating in the economy while M3 includes M2 in addition to long-term deposits and foreign currency deposits (especially in Ghana). Credit to private sectors is the sum of money made available to private sectors for economic activities though at a price which is the interest rate.

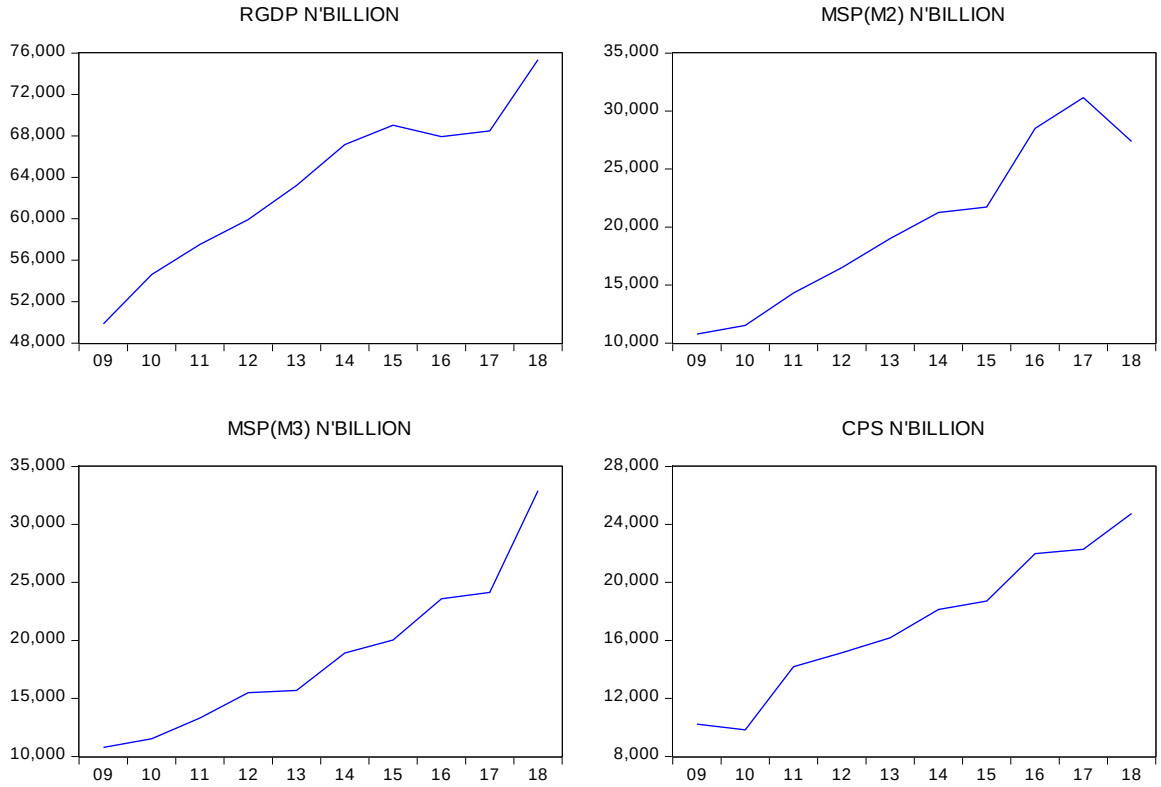

Figure 1. Trend of data collected from CBN website and Statistical bulletin, 2017 edition

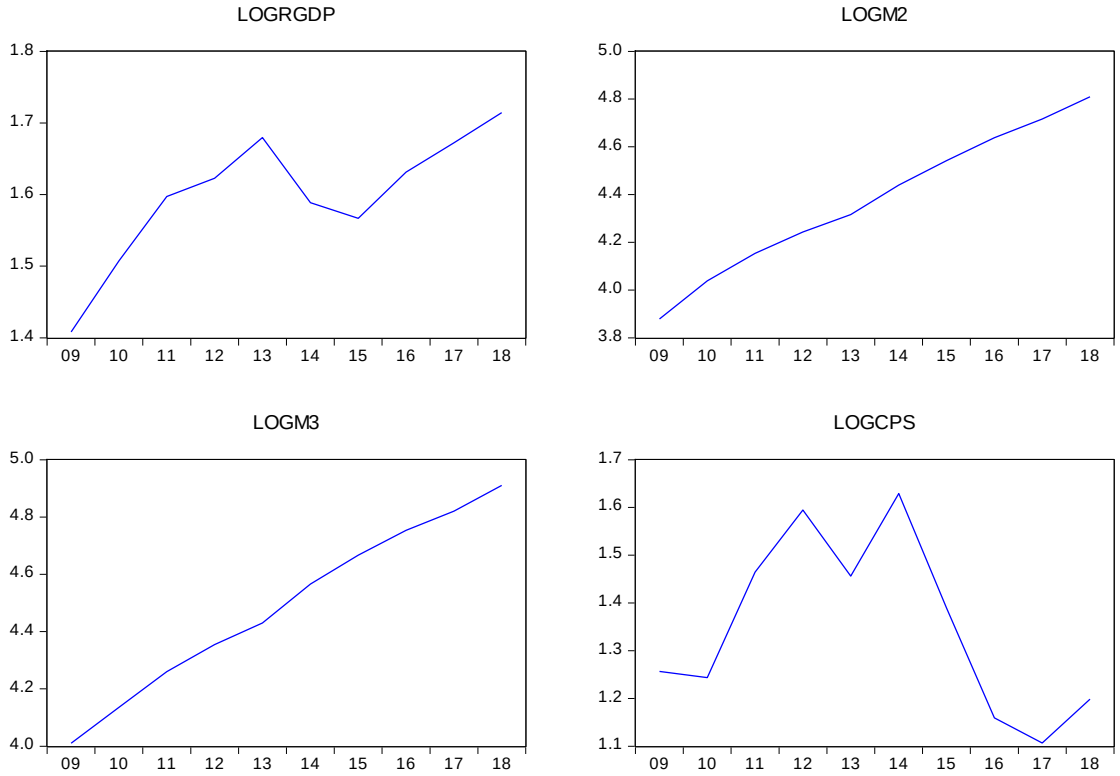

Figure 2. Trend of data collected from Bank of Ghana (BOG) website

The figure l above shows the trends of money supply in Nigeria from 2009 to 2018. The M3 and CPS have been on a steady growth with the RGDP but the M2 declined in 2018. This is attributed to so many economic factors which includes the prevailing socio-economic and political influences. However, M2 is the volume of money meant to be circulating in the economy, the reduction in M2 is a way of controlling inflation since too much money in circulation in the economy gives rise to inflation. The Central Bank of Nigeria uses the monetary policy tools to standardize the flow of money in the economy to the best interest of the country's economy. In order to maintain economic stability, money supply (M2) should be at the same rate with economic activities. The implication is that the demand for money should not exceed its supply, to avoid both recession and inflation.

2. Theoretical Review

2.1 The Monetarist Theory

Friedman (1968) pioneered the monetarist theory which emphasizes that money supply is a key macroeconomic component that impacts on economic growth of a nation. The monetarist theory states that changes in the money supply are the most essential determining factor of the rate of economic growth and the behavior of the business progression (Kenton, 2018). Monetarism hypothesizes that money supply is the key driver of economic growth which implies that as money supply rises, people demand more, factories produce more and fresh employment opportunities emerge (Kimberly, 2018). The promoters of this theory have contended that money has substantial effect on price level in an economy in the long run while in the short run, it influences employment and output (Ahuja, 2011). The monetarists consider that the size of the money supply is more significant than any other factor affecting the economy. They also advocates that monetary policies are more effective than fiscal policies which include taxation, government expenditure, and debts. Their support for monetary policy is based on the fact that, they appreciate the role of the Central Banks of countries in determining money supply in an economy thereby making them more influential than the government (Kimberly, 2018). According to Khabo (2002) there is a direct link between monetary sector and the real economic sector. The implication is that the Central Banks of nations can exert so much influence on economic growth rate since the monetary policy tools including money supply is under their control. Therefore, if a nation's money supply increases, economic activities will also increase and vice versa.

The monetarist theory formula is:

$$MV = PQ$$

Where:

M = Money Supply

V = Velocity (number of times an average amount is spent per year)

P = Price of goods and services

Q = Quantity of goods and services

2.2 Liquidity Preference Theory

Keynes (1936) formulated liquidity preference theory which stresses on the liquidity of an economy as a measure of economic growth. This theory stipulates that the demand for money is not to borrow money but the desire to remain liquid which goes with a price referred to as interest rate. Liquidity preference theory associates demand for money with the quantity of money supplied by the Central Bank in order to maintain economic stability. According to John Maynard Keynes, the public holds money for transaction, precautionary and speculative purpose. These three reasons determine the demand for money and its circulation by the Monetary Authorities of nations, in other words, the absence of these three purposes will make suppress economic growth in a country.

3. Empirical Review

Inam and Ime (2017) studied the impact of monetary policy on Nigeria's economic growth from 1970-2012 using Ordinary Least Squares (OLS) method and Granger Causality test. The study found an insignificant positive relationship between money supply and economic growth. Mohamed Aslam (2016) investigated the impact of money supply on Sri Lankan economy from 1959-2013. The study made use of gross domestic product (GDP) as the dependent variable while the independent variables were money supply, exchange rate, export earnings, import outflows and the consumer price index. The regression results indicated that money supply maintained significant positive influence on economic growth at 1% level of significance in Sri Lanka.

Njimanted et al. (2016) used Vector Auto-regression (VAR) method to analyze the effect of monetary policy tools on economic growth in the Central African Economic and Monetary Community (CEMAC). CEMAC was set up by a Treaty signed in 1972 by six states which include Cameroon, Chad, Equatorial Guinea, Gabon, The Central Africa and

the Republic of Congo. The treaty was based on monetary co-operation arrangements in order to achieve price stability. The independent variables which were the monetary policy include money supply, interest and nflation rates. The study found that monetary policy tools affected the economic growth of the CEMAC community in diverse areas.

Prasert et al. (2015) employed Pooled Mean Group Estimator (PMGE) to investigate the association between money supply and economic growth of selected ASEAN Economic Cooperation (AEC) countries from 1995-2013. The selected countries were Cambodia, Indonesia, Lae PDR, Malaysia, Philippines, Singapore, Thailand and Vietnam. The findings revealed that money supply which comprises narrow money (M1) and demand deposit (DD) had positive relationship with economic growth measured by GDP.

Havi and Enu (2014) examined the relative importance of monetary policy and fiscal policy on economic growth in Ghana from 1980-2012. The study utilized Ordinary Least Squares (OLS) method which revealed that money supply had a significant positive impact on the economy of Ghana. Kamaan (2014) statistically assessed the effect of monetary policy on economic growth in Kenya and the study disclosed that monetary policy did not have a significant impact on economic growth in Kenya.

Osasohan (2014) studied the impact of monetary policy on economic growth in the United Kingdom (UK) from 1940-2012 using Vector Error Correction Model (VECM). The study found that money supply and rate of inflation were the major tools of UK monetary policy that enhances economic growth in the country.

Chipote and Palesa (2014) employed Error Correction Model and Johansen Co-integration to examine the impact of monetary policy on economic growth in South Africa for a period of 2000 to 2010. The findings revealed that money supply as a monetary policy tool had insignificant influence on economic growth in South Africa. Onyeiwu (2012) assessed the impact of monetary policy on economic growth in Nigeria from 1981-2008 using Ordinary Least Squares Method (OLS). The findings revealed that money supply had a positive impact on GDP.

Jawad et al. (2011) applied co-integration and error correction model to examine the monetary fiscal trade policy and economic growth in Pakistan from 1981-2009 and found the existence of significant positive relationship between the variables both in the long and short run. The result specifically revealed that monetary policy is more effective than the fiscal policy in Pakistan. This finding confirms the Monetarists belief that monetary policy is a more effective economic policy than the fiscal policy.

Nouri and Samimi (2011) used Levine and Renelt growth model to investigate the impact of monetary policy on economic growth in Iran from 1974-2008. The result from the Ordinary Least Squares (OLS) method revealed that money supply exerted a significant positive influence on economic growth in Iran. This study validates the Monetarist postulation that money supply is the key driver of economic growth in a country.

Senbet (2011) employed quarterly data from 1959 to 2010 to examine the relative impact of monetary and fiscal policies on the US real economic activity using Granger Causality tests and Vector Auto Regressive (VAR) models. The study found evidence that monetary policy influenced real output better than fiscal policy in the US economy. This study also substantiates the assertion of the Monetarists that monetary policy exerts better influences on economic growth than fiscal policy.

4. Methodology

This study uses a causal research design whereby existing and secondary form of data are employed to examine the causal effect of the dependent variable on the independent variable. The dependent variable is the real gross domestic product (RGDP) while the independent variables include: broad money supply (M2), broad money supply (M3) and credit to private sectors (CPS) in Nigeria. In Ghana M3 is referred to as M2+, however, for the purposes of this study M3 is used to represent both of them. All data for Nigeria were obtained from Central Bank of Nigeria (CBN) website and Statistical Bulletin, 2017 edition while the data for Ghana were sourced for the Bank of Ghana website. The data collected covered a period from 2009 to 2018 and were analyzed using ordinary least squares technique with the aid of e-views version 9. All the data for Nigeria were expressed in Billions of Naira while the ones for Ghana were expressed in logarithm form due to their variance in values.

The multiple regression model adopted for the study is:

$$RGDP = \beta 0 + \beta_1(M2) + \beta_2(M3) + \beta_3(CPS) + \varepsilon$$

Where,

RGDP = Real Gross Domestic Product

M2 = Broad money supply (M2)

M3 = Broad money supply (M3)

CPS = Credit to Private Sectors

β_0 = Constant

β_1-β_3 = Regression Coefficients

ε = Error term

A Priori economic expectation:

$\beta_1, \beta_2, \beta_3 > 0$

The a priori economic expectation is that M2, M3 and CPS should be greater than zero indicating positive influence on RGDP.

5. Data Analysis and Interpretations

5.1 Trend Analysis of Data

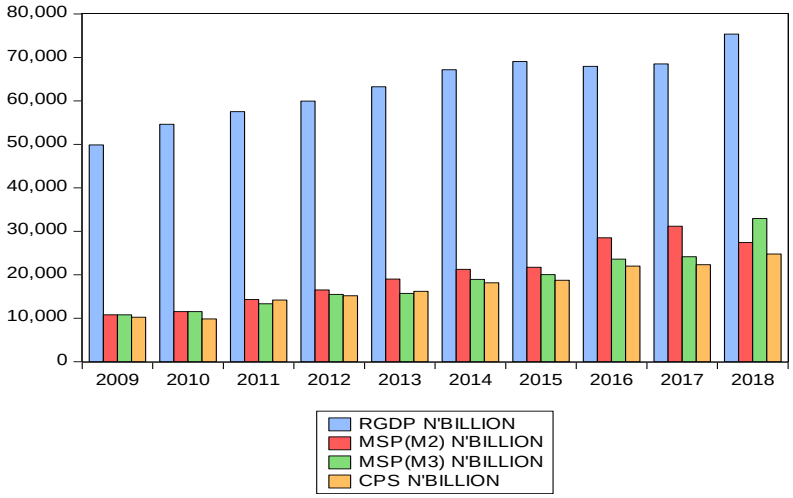

Figure 3. Trend of Nigerian RGDP, M2, M3 and CPS

Source of Data: CBN website and Statistical Bulletin, 2017 edition

Taking a closer observation on the figure 2 above, the money supply components do not seem to measure up with the RGDP. Although, from 2016 and up to 2018 there seems to be an improvement but the most important thing is that money supply in Nigeria should be adequate to drive economic growth as economically expected. The broad money supply commonly in circulation was at its peak in 2017 but declined again in 2018 while M3 took the lead. The growth in CPS is too slow, meanwhile it is necessary for the private sectors to have enough credit for business expansion that enhances economic growth in all ramifications.

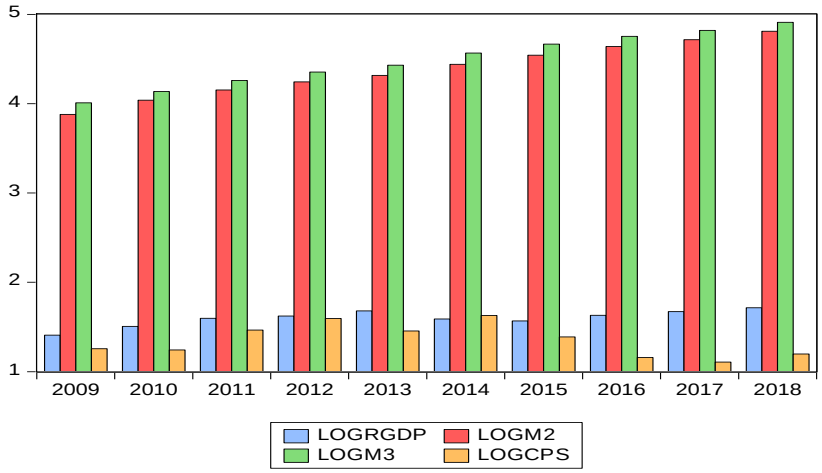

Figure 4. Trend of Ghana RGDP, M2, M3 and CPS

Source of Data: BANK OF GHANA (BOG) Website

Figure 4 above shows the trend of the data used in the study for Ghana money supply performance and economic growth. It could be observed that broad money supply (M2) and broad money supply including foreign currency deposits (M3) though referred to as (M2+) in Ghana are both rising steadily while the private sector credits (CPS) dwindled.

Table 1. Regression results for Nigeria

Dependent Variable: RGDP_N_BILLION
Method: Least Squares
Date: 02/09/19 Time: 13:21
Sample: 2009 2018
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MSP_M2__N_BILLION	-0.361567	0.494232	-0.731572	0.4920
MSP_M3__N_BILLION	0.041420	0.486517	0.085137	0.9349
CPS_N_BILLION	1.916377	1.106148	1.732478	0.1339
C	36986.54	4262.964	8.676249	0.0001
R-squared	0.919286	Mean dependent var		63306.70
Adjusted R-squared	0.878928	S.D. dependent var		7760.704
S.E. of regression	2700.363	Akaike info criterion		18.92933
Sum squared resid	43751751	Schwarz criterion		19.05037
Log likelihood	-90.64667	Hannan-Quinn criter.		18.79656
F-statistic	22.77874	Durbin-Watson stat		2.003288
Prob(F-statistic)	0.001115			

Source: Author's computation, 2019.

The table 1 above shows the regression result of the study from e-views version 9. The result shows a strong and positive correlation between money supply and economic growth represented by RGDP. The R which is the correlation is 95.9% (that is the square root of R^2) while the R-squared is 91.9%. The R-squared is the coefficient of determination which shows the extent to which all the independent variables explain the changes in the dependent variable. In this study, the independent variables explain about 91.9% of the variations in the dependent variable while 8.1% goes to other factors the model did not consider. The adjusted R-squared shows the calculated value of the independent variables captured in the model in order to increase the R^2. The Durbin-Watson statistic is approximately 2 which indicates absence of autocorrelation in the sample. The F-statistic is 22.77874 with the p-value of $0.001 < 0.05$. This result is statistically significant and shows that the model is appropriate for the study. In other words, the independent variables collectively influence economic growth in Nigeria positively and significantly.

However, the regression result on table 1 above also indicates the performance of the individual predictor variables and their level of influences on the response variable using the t-statistics. From table 1 above, M2 t-statistics is -0.731572 with the p-value of $0.49 > 0.05$ level of significance. This implies that M2 has an insignificant negative influence on RGDP. M3 t-statistics shows the value of 0.085137 with the p-value of $0.93 > 0.05$ level of significance. This result indicates that M3 has insignificant positive influence on RGDP. In the same manner, CPS t-statistics is 1.732478 with the p-value of $0.13 > 0.05$ level of significance. This result also indicates that CPS does not have a significant positive impact on RGDP. These findings agree with the Keynesians who believe that money supply has limited influence on economic growth and also validates the studies of (Chipote & Palesa, 2014; Kamaan, 2014; Inam & Ime, 2017) who found that money supply exerts insignificant influence on economic growth. On the contrary, the findings contradicts the monetarists thinking that money supply determine economic growth as well as the studies of (Nouri & Samimi, 2011; Onyeiwu, 2012; Havi & Enu, 2014Osasohan, 2014; Prasert et al., 2015; Mohamed Aslam, 2016) who established that money supply enhances economic growth.

Table 2. Regression result for Ghana

Dependent Variable: LOGRGDP
Method: Least Squares
Date: 02/12/19 Time: 09:23
Sample: 2009 2018
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGM2	3.587765	1.362287	2.633633	0.0389
LOGM3	-3.346169	1.367359	-2.447176	0.0500
LOGCPS	0.187572	0.088488	2.119746	0.0783
C	0.666680	0.313054	2.129600	0.0773
R-squared	0.841222	Mean dependent var		1.598856
Adjusted R-squared	0.761833	S.D. dependent var		0.089923
S.E. of regression	0.043885	Akaike info criterion		-3.125330
Sum squared resid	0.011555	Schwarz criterion		-3.004296
Log likelihood	19.62665	Hannan-Quinn criter.		-3.258104
F-statistic	10.59620	Durbin-Watson stat		2.357163
Prob(F-statistic)	0.008217			

Source: Author's computation, 2019.

Table 2 above shows the regression result for Ghana. The result shows a significant positive correlation between money supply and economic growth in Ghana. The correlation (R) value is 91.7% which indicates an existence of a robust relationship between the dependent and the independent variables. The value of R-square is 84.1%, this implies that it is only 15.9% of the changes in RGDP that is attributable to other factors the model did not capture. The Durbin-Watson if 2.357, indicating that there is no serial correlation in the sample. The F-statistic is 10.59620 with the p-value of 0.008 < 0.05 level of significance. This result shows that the model is a good fit and statistically significant. However, the independent variables jointly influence the RGDP significantly and positively.

The results for the individual variables show that M2 t-statistic is 2.633633 with the p-value of 0.03 < 0.05 level of significance. This result indicates that M2 has a significance positive influence on RGDP in Ghana. This finding supports the monetarist theory and the findings of (Nouri & Samimi, 2011; Onyeiwu, 2012; Havi & Enu, 2014Osasohan, 2014; Prasert et al., 2015; Mohamed Aslam, 2016). On the contrast, M3 t-statistic is -2.447176 with the p-value of 0.05 = 0.05 level of significance. The result shows that M3 has significant negative impact on RGDP while CPS t-statistic is 2.119746 with the p-value of 0.07 > 0.05 shows no impact on RGDP.

6. Conclusion and Recommendation

The importance of money supply in an economy cannot be overrated, however, its practicality and efficacy as a monetary policy tool depends on the country and the economic environment it is being utilized. The Monetarists believe that monetary policy is better than the fiscal policy while the Keynesians argue that money supply has a limited effect on economic growth. This study has been able to assess the validity of these theories under the economic scenarios of two different countries so as to contribute to the ongoing debate. The study has established that money supply components jointly enhance economic growth (F-statistic result on table 1 and 2 above), while individually (M2, M3 and CPS) none of the variables has significant influence on economic growth in Nigeria but in Ghana M2 has significant positive impact on RGDP while M3 has significant negative impact on RGDP. The broad money supply (M2) commonly used in circulating money in the economy exerts a negative influence though not significant in Nigeria but in Ghana M2 has significant positive impact showing support for monetarist theory. In the case of M3 in Nigeria, there is evidence of insignificant positive impact, while that of Ghana it is an outright significant negative impact on RGDP and CPS shows insignificant positive influence on economic growth in both Nigeria and Ghana.

Therefore, the study recommends that the Central Bank of Nigeria, should try to understand the role of money supply in enhancing economic growth and come up with monetary policies that will enable money supply to drive the economy properly in order to achieve economic growth. One of such policies is by reducing the price for credit to the private sectors because their activities contribute so much to economic growth in Nigeria. When the interest rates for obtaining credits are not choking, the private sectors will invest more, thereby giving room for more outputs and job opportunities. The study is also suggesting that the Bank of Ghana should equally strategize ways to ensure that the monetary policies on M3 and CPS is favorable enough to enhance economic expansion in Ghana.

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