

The Effect of Fiscal Policy and Monetary Policy on Ghana's Economic Growth: Which Policy Is More Potent?

Emmanuel Dodzi K. Havi¹, Patrick Enu²

Abstract

The aims of this study were to examine the relative importance of monetary policy and fiscal policy on economic growth in Ghana and then determine which of these two policies is more powerful in promoting economic growth in Ghana. The study period was from 1980 to 2012. The method of Ordinary Least Squares estimation technique was used in this study. The results obtained from the three multiple regressions were spurious free. The study revealed that monetary policy impacts on the Ghanaian economy positively. Also, the study found that fiscal policy affected the Ghanaian economy positively. Finally, the study revealed that monetary policy is more powerful in promoting economic growth in Ghana. The study recommends that monetary policies implemented by the Bank of Ghana should promote favorable investment atmosphere through appropriate stabilization of interest rates, lending rates, inflationary rates, and exchange rates to promote and ensure economic growth, economic stability, economic sustainability and economic development in Ghana.

Key words: Fiscal Policy, Monetary Policy, Potency, Economic Growth, Ghana

JEL classification: E52, E63

1. Introduction

The aims of this study are to examine the relative importance of monetary policy and fiscal policy on economic growth in Ghana and then determine which of these two policies is more potent in promoting economic growth process in Ghana. It has also been said that only about 30% of Ghanaians deal with the financial sector. Will this affect the effectiveness of monetary policy?

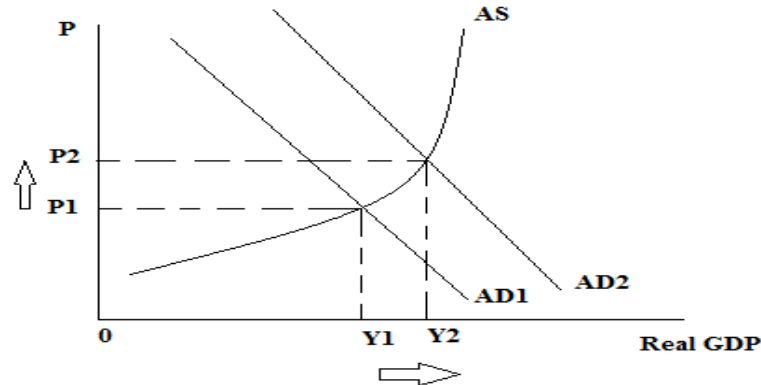
On the basis of economic principles, it is well known that, there are two main macroeconomic policies (fiscal policy and monetary policy) that can be used by economic managers to manage the health of an economy: expanding economic growth (GDP). The reason is that monetary policy and fiscal policy complement each other. The monetarists believe that monetary policy exert greater impact on economic activity while the Keynesians believe that fiscal policy rather than monetary policy exert greater influence on economic activity (Khosravi and Karimi, 2010). We also believe that economic managers pay more particular attention to one of these two policies (fiscal policy or monetary policy) to stimulate economic growth rapidly. Therefore, the questions that come to mind are: Is the Ghanaian economy strongly built on fiscal policy or monetary policy? To what extent do they influence economic growth in Ghana? How relatively important are they to the growth process of Ghana? To answer these questions, an empirical study needs to be done, hence, this study.

Fiscal policy is a demand side policy used by the government to achieve macroeconomic objectives. The macroeconomic objectives are economic growth, price stability, reduction in unemployment and balance of payments equilibrium (Kibiwot et al., 2012). Fiscal policy involves one of two things; either increasing or decreasing taxation or either increasing or decreasing government spending. All these are done to influence

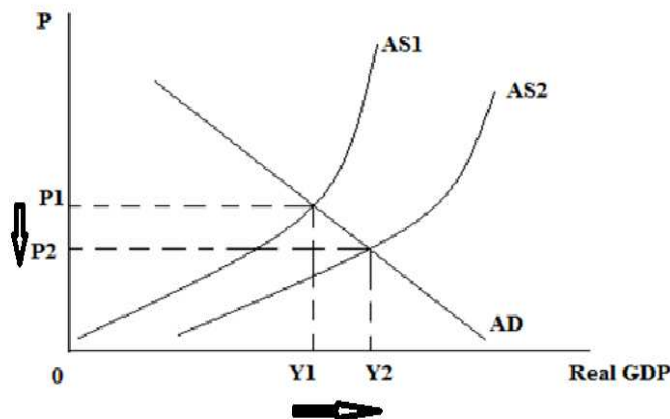
¹Methodist University College Ghana

²Methodist University College Ghana

aggregate demand (Kibiwot et al., 2012). If we assume that we want to embark on expansionary policy, two things can be done: We can decrease taxation which might be a decrease in income tax or expenditure tax. This will cause consumption to increase since one's disposable income increases when income tax falls. In addition, if corporate profit taxes fall, this will make the firms have more profit which can be reinvested into the business, hence, resulting in an increase in investment, all other things remaining unaltered. These will influence the aggregate demand. In a more simplified form, if taxes decrease, consumption will increase, investment will increase and finally aggregate demand will increase. Alternatively, we can increase government spending be it current expenditure or capital expenditure. This will also cause the aggregate demand to increase (see Harberger, 1962, 1966; Easterly et al., 1993; Garrison et al., 1995; Engen et al., 1996; Saxton, 1997; Lee et al. 2005; Koeda et al., 2008; Miron, 2013). The diagram below gives a better explanation to the case narrated above:



From the diagram above the following has happened in the economy; (1) Output has increased representing economic growth; (2) If this is true, then, we can assume that unemployment has reduced; (3) But there is a bad news; the bad news is that prices have increased, representing inflation. The opposite is also true. However, there can also be the possibility that government spending can influence aggregate supply. That is if the government should spend on research and development, education, health, sanitation, water, agriculture, transport and others, this will increase human resource capabilities leading to an increase in aggregate supply. In this case, an economy will experience an increase in real GDP, a reduction in unemployment and a reduction in price (Dornbusch and Fischer, 1990). These are shown in the diagram below.



On the other hand, monetary policy is a demand side policy that the government can use to achieve macroeconomic objectives. These objectives are sustained economic growth, price stability, low unemployment, balance of payment equilibrium and sustainable development. Monetary policy comes into being when there is a change in interest rate, a change in money supply and a change in exchange rate. If we assume that an economy wants to expand, then, the government, through the central bank, can decrease the interest rate which will further cause exchange rate to decrease. The possible effects are: (1) decrease in

mortgage payments; (2) increase in purchases on credit and (3) decrease in savings. The decrease in interest rate will cause consumption and investment to increase. Likewise, the decrease in exchange rate will cause exports to be more competitive (rise) and imports to be less competitive (fall). The increase in the three injections will lead to more money coming into the economy, hence, the attainment of economic growth.

This means that either of these two policies (fiscal policy and monetary policy) can influence an economy positively or negatively (Dwivedi, 2005). The additional questions that come to mind are (1) what is the relative impact of the fiscal policy on the growth processes of the Ghanaian economy? (2) What is the relative impact of the monetary policy on the growth processes of the Ghanaian economy?

2. Literature Review

Empirically, some researchers have proven the relationship between fiscal policy and economic growth. While some found it to be positive, others found it to be negative or no relationship at all. We can mention Landau (1983), Koester and Kormendi (1989), King and Rebelo (1990), Barro (1991), Dowrick (1992), Easterly and Rebello (1993), Ekpo (1994), Cashin (1995), Devarajan et al., (1996), Fuente (1997), Bleaney et al., (2001), Nijkamp and Poot (2004); Easterly (2005), M'Amanja and Morrissey (2005), Angelopoulos et al., (2008), Mansouri (2008), Nurudeen and Usman (2010), Dauda (2010); Husnain et al. (2011) and Okpara and Nwaoha (2010) as contributors along this line.

Ghali and Al-shamsi (1997) investigated the causal links between government expenditure and economic growth from 1973 to 1995 in United Arab Emirates using a cointegration and error-correction framework. The study found evidence in support of existence of cointegration between government expenditure and GDP. The results of the causality tests showed that causation runs from government expenditure to GDP.

Enache (2009) examined the connection between fiscal policy and economic growth in Romania using forecasted time series data for the period 1992 to 2013. The results showed a weak evidence for the positive impact of fiscal policy on economic growth. The study concluded that government authorities could use fiscal policy to affect economic growth in an indirect manner.

Benos (2009) investigated the relationship between fiscal policy and economic growth during a thirty (30) year period for fourteen (14) European countries, using Panel data model. The results showed that public spending on infrastructure and government spending on property rights has a positive impact on the rate of economic growth.

Ocran (2009) determined the impact of fiscal policy variables on economic growth in South Africa during the period 1990 to 2004. The study found that consumer spending, capital formation and tax revenues have a positive effect on economic growth but the size of the impact of capital formation was less than government spending.

Al-Khasawneh et al. (2012) examined the relationship between fiscal policy and economic growth rates in Jordan during the period 2004 to 2011. They employed the method of Vector Autoregressive Model to express the relationship between economic growth and fiscal policy. The dependent variable used was real GDP and the explanatory variables were government spending, government revenues (total revenues and foreign aid) and terms of trade (export prices to import prices). The study found that there was a significant positive relationship between real GDP and government spending during first and second delay. Again, the study found out that there was a significant positive relationship between real GDP and government revenue during the first delay. However, there was a positive relationship between real GDP and government revenue during the second period delay but was statistically insignificant. The study finally found that there was an inverse relationship between real GDP and terms of trade during the first delay, but a positive relationship between real GDP and government revenue during the second period of delay.

Babalola and Aminu (nd) investigated the impact of both fiscal revenue and expenditure on economic growth of Nigeria during the period 1977 to 2009. The study applied cointegration test. The results indicated

that productive expenditure positively impacts on economic growth and a long-run relationship existed between the variables considered as confirmed by the cointegration test. The study recommended that improvement in government expenditure on health, education and economic services, as components of productive expenditure are required to boost economic growth.

Dinca, G., and Dinca, M. S. (2013) analysed the correlation between fiscal policy and economic growth for the period 2001 to 2011. The study employed panel data analysis. They grouped the countries into two categories: old member countries (Belgium, Denmark, Germany, Ireland, Greece, Spain, France, Italy, Luxemburg, Holland, Austria, Portugal, Finland, Sweden and United Kingdom) and new member countries of the European Union (Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia). The results obtained showed that economic growth rate was positively influenced by fiscal pressure, gross capital formation in the private sector, degree of economic openness and labour productivity. Government expenditures, exchange rate and public debt exerted a negative influence upon economic growth.

Twumasi (2012) examined the impact of fiscal policy on economic growth in Ghana for the period 1981 to 2008. The study utilized the DF-GLS test of stationarity and the bounds test approach of cointegration. The outcome of the bounds test supported the existence of a long run impact of the fiscal variables on economic growth. The study found out that in the long-run, government investments and the government transfer payments affected economic growth positively while taxes and government consumption spending showed a negative link. The study suggested that budget policies in Ghana should be tailored towards reducing government consumption expenditure and raising those expenditures that enhance economic growth.

Sakyi (2011) investigated the relationship among trade openness, foreign aid and economic growth in Ghana by using the data set for the period 1984 to 2007. The method of estimation of the study was autoregressive distributed lag model. The study found positive short run and long run relationship among trade openness, foreign aid and economic growth. The study also found that the coefficient of labour participation rate and share of government spending in GDP was significant and negatively related to economic growth in Ghana.

From the above empirical analysis of the link between economic growth and fiscal policy, the findings are mixed outcomes and diverse. In other words, the conclusion of the debate on effectiveness of fiscal policy as a tool for promoting economic growth and development remain uncertain, given the conflicting empirical results of current studies as seen from above. As a result, to what extent does fiscal policy influence economic growth in Ghana? Is it relatively important in affecting economic growth in Ghana?

In addition, the relationship between monetary policy and economic growth has also been explored. The conclusion of the debate on its effectiveness as a tool for stimulating economic growth and development remains inconclusive, given the conflicting views of current studies as illustrated below.

Fasanya et al. (2013) examined the impact of monetary policy on economic growth in Nigeria. The study used time series data covering the period 1975 to 2010. Error correction model was used for the analysis. The study showed that long run relationship exists among the variables. In addition, the study showed that inflation rate, exchange rate and external reserves were significant monetary policy instruments that drive economic growth in Nigeria. The study recommended that the establishment of primary and secondary government bond markets that can also increase the efficiency of monetary policy and reduce the government's need to rely on the central bank for direct financing should be pursued.

Ogunmuyiwa et al. (2010) investigated the relationship between money supply and economic growth in Nigeria between 1980 and 2006. The study used time series data. The study employed ordinary least squares and error correction mechanism as methods of estimation. The study found that economic growth in Nigeria was influenced by the level of money in the Nigerian economy.

Nouri et al. (2011) examined the impact of monetary policy on economic growth in Iran during the period 1974 to 2008. The method used is the ordinary least squares technique. They found that there is a positive and significant relationship between money supply and economic growth in Iran.

Mohammad et al. (2009) examined the long – run relationship among M2, inflation, government expenditure and economic growth in Pakistan during the period 1977 to 2007. The method of estimation was cointegration. The results indicated that public expenditure and inflation have significantly and negatively influence on economic growth in Pakistan while M2 had a significant and positive effect on economic growth in the long run.

On the issue of which of these two policies (fiscal policy and monetary policy) is good in managing the state of an economy, there are two schools of thought. Some are of the view that it is fiscal policy while others are also of the view that it is monetary policy. Which of these two schools of thought does Ghana belong to?

Adefeso et al. (2010) examined the relative effectiveness of fiscal and monetary policy on economic growth in Nigeria. Annual time series data from 1970 to 2007 was used. The study employed cointegration and error correction estimation techniques. The outcome of the study indicated that the effect of monetary policy on economic growth in Nigeria was much stronger than fiscal policy. They recommended that policy makers should emphasise on monetary policy for the purpose of economic stabilisation in Nigeria.

Khosravi et al. (2010) examined the impact of fiscal policy and monetary policy on economic growth in Iran during the period 1960 to 2006. The study employed autoregressive distributed approach to cointegration. The study found that the impact of exchange rate and inflation on economic growth in Iran is negative. The study also found out that government spending has a significant positive effect on GDP growth.

Ali et al. (2008) examined the effects of fiscal policy and monetary policy on economic growth in South Asian countries. Annual time series data from 1990 to 2007 was used. Autoregressive distributed lag model was employed. The results showed that money supply had a positive and significant effect on economic growth in the short and long runs, but fiscal policy had an insignificant effect on economic growth in the short run and long run. They concluded that monetary policy is a more powerful tool than fiscal policy in enhancing the economic growth in South Asian countries.

Jawaid et al. (2010) investigated the comparative effect of fiscal and monetary policy on economic growth in Pakistan during the period 1981 to 2009. Annual time series data was used by the researchers. Cointegration test was used for the analysis. The Cointegration test confirmed positive long run relationship between monetary policy as well as a fiscal policy and economic growth. Monetary policy was found to be more effective than fiscal policy in stimulating growth in Pakistan. They suggested that policy makers should focus more on monetary policy than fiscal policy to ensure economic growth.

Ajisafe et al. (2002) examined the relative effectiveness of monetary and fiscal policy on economic activity in Nigeria during the period 1970 to 1998. The study used cointegration and error correction modeling techniques. Annual time series data was used. The study revealed that monetary rather than fiscal policy exerts a greater impact on economic activity in Nigeria.

Sayera (2012) investigated the relative importance of monetary and fiscal policies in altering real output growth in Bangladesh. Broad money supply (M2) and government consumption expenditure were used as a proxy for monetary and fiscal policies respectively while GDP growth at constant prices was used as proxy for real output growth. Various charts, graphs, correlation, granger causality test, co-integration and vector error correction approach were used to examine the validity of St. Louis equation in measuring relative effectiveness of monetary and fiscal policies in Bangladesh. The empirical results proved that both monetary and fiscal policies had significant and positive impact on real output growth in Bangladesh with varying degrees. The outcomes of the study demonstrated that monetary policy had a relatively stronger impact than that of fiscal policy in altering output growth in Bangladesh.

Ezeji et al. (2013) investigated the impact of monetary and fiscal policies on Nigeria economic growth from 1990 to 2010. The econometric techniques employed by the study were unit root test, co-integration and VAR model. The study revealed that the time series properties of the variables attained stationarity at first order. The variables were co-integrated at most 1 with at least 2 co-integrating equations. The findings of the study confirmed that fiscal policy measures exert greater effect than monetary policy measures on the level of

economic development in Nigeria and concluded that monetary and fiscal policies measures are jointly statistically significant to the level of economic activities in Nigeria.

Unaimikogbo et al. (2001) examined the impact of monetary and fiscal policies on manufacturing industry in Nigeria. The study used simulation equation model from 1986 to 1997. Using Ordinary Least Squares estimation technique, the study found that both policies contribute significantly to growth of the manufacturing industry. The study concluded that monetary variable was more effective and dependable than fiscal variable in affecting changes in economic activities of Nigeria.

Onyeiwu (2012) examined the impact of monetary policy on the Nigerian economy. The study used Ordinary Least Squares Method to analyse data from 1981 to 2008. The results of the analysis showed that monetary policy, represented by money supply; exert a positive impact on GDP growth and Balance of Payment, but a negative impact on inflation. The study recommended that monetary policy should facilitate a favourable investment climate through appropriate interest rates, exchange rate and liquidity management mechanism and also the money market should provide more financial instruments that satisfy the requirement of the ever-growing sophistication of operators (see Cambazoglu et al, 2012; Gul et al., 2012; Loria et al., 2011).

From the above empirical literature reviews, the effect of monetary and fiscal policies on economic growth can be taken with mixed reactions. Monetary policy compared with fiscal policy, monetary policy is said to be quicker and faster at resolving economic shocks. Is that the case in Ghana?

3. Materials and Methods

Model Specification

This study employed the production function in which money supply, government spending, labour and capital were considered as inputs. The impact of fiscal policy and monetary policy on economic performance were specified. For the impact of the fiscal policy on economic growth, the RGDP was specified a function of government spending, labour and capital while for the monetary policy impact on economic growth, the RGDP was a function of money supply, labour and capital. To determine the effectiveness of the impacts of fiscal policy and monetary policy on economic growth, money supply, government spending, labour and capital were included in the standardized model. These models were mathematically expressed as:

$$\text{RGDP} = f(\text{government spending, labour, capital}) + \varepsilon \text{ ----- (1)}$$

$$\text{RGDP} = f(\text{money supply, labour, capital}) + \varepsilon \text{ ----- (2)}$$

$$\text{RGDP} = f(\text{fiscal policy, monetary policy, labour, capital}) + \varepsilon \text{ ----- (3)}$$

Where: RGDP represented real gross domestic product and ε represented the stochastic term.

Item	Measure	A Prior Expectations
Economic Growth	Real Gross Domestic Product	
Labour	Total labour force	Positive (+)
Capital	Gross fixed capital formation	Positive (+)
Monetary policy	Money supply (M2)	Positive (+)
Fiscal policy	General Government consumption expenditure (current US\$)	Positive/negative (+ or -)

Method of Estimation

The Ordinary least squares method of estimation was used to determine the values of the respective parameter estimates.

Coefficient of Determination

The coefficient of determination was used to indicate how the explanatory variables included in the models best explain the total variation in the dependent variables. The closer it is to 1 be it positive or negative the better. The main weakness of the unadjusted R^2 is that it does not take the degrees of freedom into account, this weakness is corrected by using the adjusted R^2 (Mukras, 1993).

The P-Value for Each Explanatory Variable

The p-value for each explanatory variable was used to check whether each coefficient is significantly different from zero or not. Its value should be lower than 0.05. If each explanatory variable of the models has a p-value inferior to the 0.05 critical values, then it confirms that all the explanatory variables have a significant impact upon the dependent variable. To quickly judge whether the models exhibited the problem of multi collinearity, the p – values were used. If the parameter estimates prove to be statistically significant, then it will mean that the problem of multi collinearity does not exist.

The Global Significance Test

The global significance test that is F-statistics was used to test if all the model coefficients were significantly different from zero. If the p-value for the F-statistics is lower than the 0.05 critical value, then it means that all the explanatory variables included in the model have a statistically significant impact on the dependent variable or otherwise. That is the overall multiple regression equation and the parameters estimates are statistically significant and the regression line performs well.

Durbin Watson Statistic (DW)

The DW was used to test for the presence of autocorrelation. The traditional benchmark is 2.0. If DW lies between 1.5 – 2.5 means the assumption of linearity is not violated.

Durbin Watson (DW) and R—Squared (R^2)

According to Granger and New bold, if the value of the R-squared is greater than the value of the DW ($R^2 > DW$), then there is a good rule of thumb to suspect that the estimated regression is spurious. The R^2 and the t-statistic from such a spurious regression are misleading, and the t-statistics are not distributed as t distribution and, therefore, cannot be used for testing hypotheses about the parameters.

Source of Data and Sample Size

The data used for the estimates were taken from World Development Indicator 2014. The years considered for the data selection were from 1980 to 2012. This gives a sample size of 33 which greater than the general acceptable size of 30.

Econometric Package Used

The statistical package used for the estimations was E-views 7.

4. Empirical Results and Discussion

The summary statistics of all variables used in this study is shown in table 1 below. From the table, real gross domestic product (RGDP), log of money supply, log of government expenditure, labour(L), capital(K) are approximately normal since their kurtosis is about three. Therefore, these variables will be used in the estimation of the model. As a result, the model that will be estimated will have its dependent variable not in log while the independents; money supply and government expenditure are in log and labour and capital are not in log. Therefore, for good comparison the elasticities of the coefficients will be computed to determine the relative impacts of the independent variables on the dependent one.

Table 1: Descriptive Statistics of Variable under Consideration

	LOG (RGDP)	RGDP	LOG (MS)	MS	LOG (GOVEXP)	GOVEXP	LOG (K)	K	LOG (L)	L
Mean	22.72025	8.16E+09	19.02849	2.92E+09	20.58168	1.25E+09	20.92836	2.09E+09	15.68456	7103828.
Median	22.68155	7.09E+09	19.26883	2.34E+08	20.46509	7.72E+08	21.03514	1.37E+09	15.78982	7201638.
Maximum	23.63447	1.84E+10	23.81555	2.20E+10	22.47237	5.75E+09	22.75807	7.65E+09	16.19936	10846580
Minimum	22.06919	3.84E+09	13.58617	795055.0	19.28698	2.38E+08	18.77507	1.43E+08	13.10464	491214.9
Std. Dev.	0.452515	3.92E+09	3.135193	5.54E+09	0.812415	1.28E+09	1.103464	2.22E+09	0.545939	2301924.
Skewness	0.309160	1.001326	-0.146578	2.237932	0.724283	1.902287	-0.132263	1.468053	-3.295479	-0.561509
Kurtosis	2.079204	3.194840	1.799980	7.123000	2.660849	6.118080	2.384955	3.926210	16.27057	3.334943
Jarque-Bera	1.691504	5.566797	2.098236	50.91967	3.043380	33.27116	0.616350	13.03305	301.8796	1.888364
Probability	0.429234	0.061828	0.350247	0.000000	0.218343	0.000000	0.734787	0.001479	0.000000	0.388998
Sum	749.7683	2.69E+11	627.9403	9.63E+10	679.1955	4.13E+10	690.6357	6.91E+10	517.5903	2.34E+08
Sum Sq. Dev.	6.552639	4.91E+20	314.5419	9.80E+20	21.12056	5.22E+19	38.96428	1.57E+20	9.537566	1.70E+14
Observations	33	33	33	33	33	33	33	33	33	33

Source: Authors computation, 2014

The Effect of Monetary Policy on RGDP

The effect of the monetary policy on RGDP is shown in table 2 below. The value of the adjusted R^2 is 99%. This value means that approximately 99% of the total variation in economic growth is explained by labour, capital and money supply. The value of the other factors which cause and influence economic which are not capture by this mode is 1%. This value further means that this multiple regression has a very good fit. Also, overall, the multiple regression equation for the effect of monetary policy on economic growth is statistically significant since the p-value of the F-statistic is 0.0000 which is less than 0.05. In addition, the value of the DW statistics is 1.69 which lies between 1.5 and 2.5. This value shows that there is no evidence of autocorrelation presence. The results obtained from this multiple regression are sensible and acceptable since the value of the DW (1.69) is greater than the value of the R^2 (0.988029). It indicates that the results are not spurious. This allows for further inferences from the findings.

From table 2 below, money supply has positive impact on RGDP in Ghana. 1% increase in money supply will cause the Ghanaian economy to expand by 0.115%. This value is less than unity and it is inelastic. This means that a greater increase in money supply will cause a smaller increase in RGDP, ceteris paribus. This value is statistically significant since the p-value of (0.0000) is less than 0.05. The implication here is that if Bank of Ghana injects more money into the Ghanaian economy, it is going to help businesses to grow as well boost the overall economic growth of Ghana, all other things being equal. This means that monetary policy is an effective tool for managing the state of the Ghanaian economy. This finding is consistent with the findings of Ogunmuyiwa et al. (2010), Nouri et al. (2011) and Mohammad et al. (2009).

The capital stock also has a positive impact on RGDP. This impact is significant and is inelastic. It means that a percentage increase in capital stock leads to 0.1331 percentage increase in the growth of the Ghanaian economy, all other factors held constant. More so, the labour has a negative impact on RGDP. This impact is not significant, but it is inelastic. From table 2, a percentage increase in labour leads to 0.0214 percentage decrease of the growth of the Ghanaian economy, ceteris paribus.

Table 2: The Effect of Monetary Policy on RGDP

Dependent Variable: RGDP					
Method: Least Squares					
Date: 06/17/14 Time: 12:32					
Sample: 1980 2012					
Included observations: 33					
Convergence achieved after 48 iterations					
MA Backcast: 1978 1979					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Elasticity
C	-1.06E+10	2.13E+09	-4.972568	0.0000	
LOG(MS)	9.38E+08	1.24E+08	7.559506	0.0000	0.1150
K	0.519657	0.116948	4.443490	0.0001	0.1331
L	-24.60432	40.46266	-0.608075	0.5482	-0.0214
MA(1)	1.611966	0.059412	27.13211	0.0000	
MA(2)	0.873897	0.048024	18.19717	0.0000	
R-squared	0.989900	Mean dependent var		8.16E+09	
Adjusted R-squared	0.988029	S.D. dependent var		3.92E+09	
S.E. of regression	4.28E+08	Akaike info criterion		42.75181	
Sum squared resid	4.95E+18	Schwarz criterion		43.02390	
Log likelihood	-699.4048	Hannan-Quinn criter.		42.84336	
F-statistic	529.2278	Durbin-Watson stat		1.686602	
Prob(F-statistic)	0.000000				
Inverted MA Roots	-.81-.47i	-.81+.47i			

Source: Authors Computation, 2014

NB: the respective elasticities were calculated as $\varepsilon_{MS} = \frac{\partial RGDP}{\partial MS} \times \frac{MS^*}{RGDP^*} = \frac{\alpha_1}{RGDP^*}$;

$$\varepsilon_K = \frac{\partial RGDP}{\partial K} \times \frac{K^*}{RGDP^*} = \frac{\alpha_3 K^*}{RGDP^*}; \varepsilon_L = \frac{\partial RGDP}{\partial L} \times \frac{L^*}{RGDP^*} = \frac{\alpha_3 L^*}{RGDP^*} \dots$$

Where RGDP*, MS*, GOV*, K* and L* are the mean of real gross domestic product (RGDP), log of money supply, log of government expenditure, capital(K) and labour(L), respectively.

The Effect of Fiscal Policy on RGDP

The effect of the fiscal policy on RGDP is shown in table 3 below. The value of the adjusted R² is 97%. This value means that approximately 97% of the total variation in economic growth is explained by labour, capital and government spending. The value of the other factors which the growth equation did not capture is 3%. This value of the adjusted R² further means that the multiple regression has a very good fit. Overall, the multiple regression equation for the effect of fiscal policy on economic growth is statistically significant since the p-value of the F-statistic is zero which is less than 0.05. The value of the DW statistics is 1.82. This value lies between 1.5 and 2.5. This shows that there is no evidence of autocorrelation presence. The results obtained from the multiple regression are sensible and acceptable since the value of the DW (1.82) is greater than the value of the R² (0.974882). This shows that the results obtained are not spurious. This gives room for further analysis to be done.

From table 3 below, government spending has positive impact on RGDP. 1% increase in government spending will cause economic growth to increase by 0.2365%. This value is inelastic and it is statistically significant since its p-value of 0.0027 is less than 0.05. This finding further means that a greater increase in government spending will cause a smaller increase in economic growth. This implies that fiscal policy is a

significant tool for managing the health status of the Ghanaian economy. This finding confirms the findings of Enache (2009), Benos (2009), Al-Khasawneh et al. (2012) and Dinca et al. (2013).

Capital stock has a positive impact on RGDP. This impact is significant and it is inelastic. It means a percentage increase in capital stock leads to 0.2328 percentage increase of the Ghanaian economy, ceteris paribus. The labour has a positive impact on RGDP and it is inelastic but not statistically significant. A percentage increase in labour leads to 0.0259 percentage increase of the Ghanaian economy, all other things being fixed.

Considering the analysis from table 2 and 3 above, it has been established that both monetary policy and fiscal policy are tools that can be used to manage the health of the Ghanaian economy more positively. The issue here is that, for a more focused and prudent strategic economic management systems in Ghana, which of these two policies is more effective or potent?

Table 3: The Effect of Fiscal Policy on RGDP

Dependent Variable: RGDP					
Method: Least Squares					
Date: 06/17/14 Time: 12:46					
Sample: 1980 2012					
Included observations: 33					
Convergence achieved after 46 iterations					
MA Backcast: 1977 1979					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Elasticity
C	-3.35E+10	1.15E+10	-2.906326	0.0074	
LNGOV	1.93E+09	5.81E+08	3.319255	0.0027	0.2365
K	0.908839	0.227972	3.986633	0.0005	0.2328
L	29.74337	103.9917	0.286017	0.7771	0.0259
MA(1)	0.913042	0.154767	5.899477	0.0000	
MA(2)	1.051019	0.062530	16.80828	0.0000	
MA(3)	0.610721	0.140661	4.341790	0.0002	
R-squared	0.979592	Mean dependent var		8.16E+09	
Adjusted R-squared	0.974882	S.D. dependent var		3.92E+09	
S.E. of regression	6.20E+08	Akaike info criterion		43.51577	
Sum squared resid	1.00E+19	Schwarz criterion		43.83321	
Log likelihood	-711.0103	Hannan-Quinn criter.		43.62258	
F-statistic	207.9984	Durbin-Watson stat		1.820366	
Prob(F-statistic)	0.000000				
Inverted MA Roots	-.11+.94i	-.11-.94i	-.68		

Source: Authors Computation, 2014

NB: the respective elasticities were calculated as $\varepsilon_{GOV} = \frac{\partial RGDP}{\partial GOV} \times \frac{GOV^*}{RGDP^*} = \frac{\alpha_1}{RGDP^*}$;

$$\varepsilon_K = \frac{\partial RGDP}{\partial K} \times \frac{K^*}{RGDP^*} = \frac{\alpha_3 K^*}{RGDP^*}; \varepsilon_L = \frac{\partial RGDP}{\partial L} \times \frac{L^*}{RGDP^*} = \frac{\alpha_3 L^*}{RGDP^*} \dots$$

Where RGDP*, MS*, GOV*, K* and L* are the mean of real gross domestic product (RGDP), log of money supply, log of government expenditure, capital(K) and labour(L), respectively.

Which one of the Two Policies is more Potent?

To determine which policy is more effective, both fiscal and monetary policy measures were included in the standardized growth model and their effect on GDP were estimated and it is shown in table 4 below.

Table 4: Comparing the Effects of Fiscal and Monetary Policies on RGDP

Dependent Variable: RGDP-8.16E+09					
Method: Least Squares					
Date: 06/17/14 Time: 12:58					
Sample (adjusted): 1982 2012					
Included observations: 31 after adjustments					
Convergence achieved after 89 iterations					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	Elasticity
C	-2.49E+09	6.37E+08	-3.914983	0.0007	
LNGOV-20.6	3.18E+08	1.53E+08	2.070965	0.0493	0.0390
LNMS-19	3.83E+08	1.21E+08	3.174704	0.0041	0.0469
K-2.09E+09	-0.270956	0.107641	-2.517206	0.0189	-0.0694
L-7103828	0.339519	37.95464	0.008945	0.9929	0.0003
AR(1)	0.887546	0.256036	3.466489	0.0020	
AR(2)	0.324722	0.307037	1.057600	0.3008	
R-squared	0.997582	Mean dependent var		2.65E+08	
Adjusted R-squared	0.996978	S.D. dependent var		3.89E+09	
S.E. of regression	2.14E+08	Akaike info criterion		41.39612	
Sum squared resid	1.10E+18	Schwarz criterion		41.71992	
Log likelihood	-634.6398	Hannan-Quinn criter.		41.50167	
F-statistic	1650.331	Durbin-Watson stat		1.969663	
Prob(F-statistic)	0.000000				
Inverted AR Roots	1.17	-.28			
	Estimated AR process is nonstationary				

Source: Authors Computation, 2014

NB: the respective elasticities were calculated as

NB: the respective elasticities were calculated as

$$\varepsilon_{MS} = \frac{\partial RGDP}{\partial MS} \times \frac{MS^*}{RGDP^*} = \frac{\alpha_1}{RGDP^*}; \quad \varepsilon_{GOV} = \frac{\partial RGDP}{\partial GOV} \times \frac{GOV^*}{RGDP^*} = \frac{\alpha_2}{RGDP^*};$$

$$\varepsilon_K = \frac{\partial RGDP}{\partial K} \times \frac{K^*}{RGDP^*} = \frac{\alpha_3 K^*}{RGDP^*}; \quad \varepsilon_L = \frac{\partial RGDP}{\partial L} \times \frac{L^*}{RGDP^*} = \frac{\alpha_3 L^*}{RGDP^*}$$

Where $RGDP^*$, MS^* , GOV^* , K^* and L^* are the mean of real gross domestic product (RGDP), log of money supply, log of government expenditure, capital(K) and labour(L), respectively.

From table 4, the results show that the overall multiple regression model is statistically significant with an F-statistics value of 1560.33 and its p-value of zero which is less than 5%. This means that all the coefficients in the model are statistically different from zero. The value of the adjusted R^2 is 99.7% approximately. This means that about 99.7% of the total variation in economic growth is explained by government spending, money supply, capital and labour. The remaining unexplained variation due to other factors is 0.3%. The value of the R^2 indicates a very good fit. The value of the DW statistics is 1.97 approximately. This value shows that there is no evidence of autocorrelation presence since the value of the DW lies between the reasonable range of 1.5 and 2.5. Above all, the results obtained are sensible and very

acceptable since the results are not spurious. That is the value of the DW (1.97) is greater than the value of the adjusted R^2 (0.997).

From table 4, government spending has positive and significant impact on RGDP. This impact is inelastic. This shows that a percentage increase in government spending leads to 0.039 percentage increase in the expansion of the Ghanaian economy, *ceteris paribus*. This means that fiscal policy is a significant instrument in managing the health of the Ghanaian economy. Also, money supply has positive impact on RGDP. This impact is statistically significant and it is inelastic. This shows that a percentage increase in money supply leads to 0.0469 percentage increase in the expansion of the economy, all other things being same. This means that monetary policy is an effective instrument in managing the health of the Ghanaian economy. The balance budget effect of the fiscal and monetary policies on RGDP is (7.01E+08), this means that the overall both policies affect the Ghanaian economy positively.

Comparatively, based on the degree of elasticity of both monetary policy (0.0469) and fiscal policy (0.0390), it can be concluded in this study that in managing the health of the Ghanaian economy more effectively and efficiently, monetary policy is the main instrument to be used. Therefore, monetary policy is a more effective and powerful tool for promoting economic growth in Ghana than fiscal policy. This finding confirms the findings of Adefeso et al. (2010), Ali et al. (2008), Jawaid et al. (2010), Ajisafe et al. (2002), Sayera (2012), and Unaimikogbo et al. (2001).

In addition, the capital stock has a negative impact on RGDP. This impact is inelastic and statistically significant. This means that a percentage increase in capital stock leads to 0.0694 percentage decrease in the economic performance of Ghana, all else being same. More so, labour has a positive impact on RGDP and this impact is inelastic but not statistically significant. A percentage increase in labour leads to 0.0003 percentage increase in the economic performance of Ghana, *ceteris paribus*.

5. Conclusion and Policy Recommendations

The aims of this study were to examine the relative importance of monetary policy and fiscal policy on economic growth in Ghana and then determine which of these two policies is more powerful in promoting economic growth in Ghana. The study period was from 1980 to 2012. The method of Ordinary Least Squares estimation technique was used in this study. The results obtained from the three multiple regressions were spurious free. The study revealed that monetary policy impacts on the Ghanaian economy positively. Also, the study found that fiscal policy affected the Ghanaian economy positively. Finally, the study revealed that monetary policy is more powerful in promoting economic growth in Ghana. The study recommends that monetary policies implemented by the Bank of Ghana should promote favourable investment atmosphere through appropriate stabilization of interest rates, lending rates, inflationary rates, and exchange rates to promote and ensure economic growth, economic stability, economic sustainability and economic development in Ghana.

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