Empirical Analysis of the Potency of Fiscal Policy on Economic Growth in Ghana

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Abstract

This study examined the effect of fiscal policy on economic growth in Ghana. The fiscal variables considered in the study included, government consumption expenditure, government investment expenditure, government transfer payments and taxes revenue. Annual data covering the period of 1983 to 2012 were collected and interpolated into quarterly series for the analysis of the study. The analysis was done by the use of vector error correction model (VECM) and vector autoregression (VAR) approaches. The empirical results revealed that government investments, government transfer payments and tax revenue affect economic growth positively whereas government consumption expenditure affects economic growth negatively. Since the short run and long run results were the same, the study recommended that the government needs to invest in productive sectors and also introduce policies that would protect and enhance private investments. It was also suggested to the government of Ghana to put in more efforts in revenue mobilisation since tax revenue serve as a source of funding for government expenditure in undertaking infrastructure development.

1. Introduction

There is considerable controversy about the impacts of government fiscal policy on economic growth, particularly in developing economies. The objective of fiscal policy is principally to quicken socio-economic development by following a policy stance that guarantees a sense of balance between taxation, expenditure and borrowing that is harmonious with sustainable growth. However, the extent to which fiscal policy stimulates economic growth continues to entice theoretical and empirical debate mainly in developing countries. Economic growth represents the expansion of a country's potential output. Growth models that incorporate public services, the optimal tax policy lingers on the

characteristic of services (Easterly & Rebelo, 1993). Fiscal policy sees to government planned actions in expending money and levying taxes in an attempt of influencing macro-economic variables in a desired direction. For that reason, fiscal policy seeks to stabilise the economy. In the words of Dornbusch and Fischer (1990), increases in government expenditure or a cutback in taxes tend to pull the economy out of a recession; although reduced expenditure or increased taxes decelerate a boom.

Government expenditures in Ghana can be put into two main categories thus, capital expenditure and recurrent expenditure. Capital expenditure involves all those expenditure incurred on items that can last for a long period of time. It includes expenditures on building of railways, bridges, roads, and schools. The recurrent expenditures are the government expenditures that are incurred in regular intervals or incurred within a particular year. This includes expenses like wages and salaries and payments of interest rates on loans.

According to Kusi (1998), the Ghanaian experience with fiscal performance in the 1970-1982 periods was very disappointing. During this period, macroeconomic analyses and projections were not fully undertaken to provide a base for effective and consistent fiscal policy formulation. In Ghana, fiscal policy has been very vital to the formulation of government agenda. This implies that, the levels of government spending and taxes are to a large extent determined by the objectives and plans of the government.

In 1983 and 1986 Ghana adopted reform and adjustment programmes of Economic Recovery Programme and Structural Adjustment Programme respectively. The growth record of Ghana before reforms periods had been uneven. Growth was turbulent during much of the periods after the mid-1960s and only began to stabilize by 1984. In 1966, 1972, 1975-6, 1979, 1981-3, the growth rate was negative. Studies indicate that different factors contribute to growth.

Ghana after embarking upon fiscal reforms for more than two decades the question that arise is: What are the effects of fiscal policy variables on economic growth? The impact of fiscal policy on growth has generated large volume of empirical studies with mixed findings using cross sectional, time series and panel data. Most of the empirical studies on the fiscal policy variables on economic growth are mainly cross-country studies (example Gupta, Clements, Baldacci, & Mulas-Granados (2005); Derin (2003); Yasin (2003)). In Ghana, these findings cannot be directly applied since these findings may not accurately and adequately reflect the Ghanaian experience. These differences can be observed in terms of institutional, political, financial, economic structures, and also in their reactions to external shocks. This study will contribute to the literature by employing a country-specific approach to examine the effect of fiscal policy on economic growth in Ghana.

The apparent lack of clarity between fiscal policy and economic growth and the need to quantify the effects, call for further empirical investigation. In Ghana, the components of government spending and taxes are broadening such that the selection and combination of fiscal policy variables are gradually becoming complex. Thus the need to identify the individual effect of these fiscal variables offers another motivation for this paper.

Following from the problem statement, the primary objective of the paper is to examine the effect of fiscal policy on economic growth in Ghana using time series data over the period 1983 to 2012. In terms of specific objectives, the paper sought to investigate the short and long run relationships between government consumption expenditure, government investment expenditure, government transfer payment, tax revenue and economic growth. Also, the paper intends to determine the causality among the variables. Finally, the paper seeks to find the net effect among the variables on economic growth in Ghana.

2. Review of Related Literature

The impact of fiscal policy on growth has generated large volumes of theoretical and empirical studies with mixed findings. The development of Solow's neoclassical model of growth has allowed the study of the dynamic impact that taxation has on growth. In this model, the status of a stationary state is

determined by external factors such as population dynamics and technological progress, and that fiscal policy can only influence the rate of growth during the period of transition towards it. As a result, it may be considered that the differences in fiscal system, from the deficit or from the budgetary policy can be considered as important factors for the level of production, but less for long-term growth rates (Feder, 1983). Solow (1956) basically argues that when production takes place under usually neoclassical conditions of variable proportions and constant returns to scale, there will be no hostility between natural and unwarranted growth rates. The system is self-adjusting to any given rate of growth of labour force and finally moves towards a state of steady proportional expansion.

In a neoclassical growth model, accumulation of labour and capital are the only drivers of economic growth in the long run, with no role for tax or any other policies. Changes in tax structures, however, can nonetheless have a bearing on the long run levels of Gross Domestic Product, with growth effects appearing over a transitional period towards a new equilibrium. The duration of such transitions is in principle unclear, but given considerable adjustment costs of capital stocks or education, it is conceivable that it can take decades to reach a new equilibrium.

In contrast to the above discussions, Romer's (1986, 1987) key line of reasoning for developing endogenous growth theory is that technological alteration is not "manna from heaven" and its trends and degree can be directed. If this is the case, technology can then be made endogenous to growth, rather than being an exogenous factor as in Solow's model. Endogenous growth model postulate that investments in research and development, and in physical and human capital are major determinants of growth. In addition, technological progress and other external factors are the main sources of economic growth. Again, the theory emphasized the role of the financial sector in promoting innovations and the speed of technological progress, thus contributing to long-term economic growth (King & Rebelo, 1993).

The models of endogenous growth tend to transform the temporary effects of fiscal policy into permanent effects of growth (Romer, 1987). Most of the growth models consider taxes on investment and on income as having a negative effect on economic growth. These taxes affect the rate of growth, directly, by reducing the net profit earned. But not all taxes affect growth. In the models in which the employment offer is considered to be exogenous, the rate of growth is immune to the level of taxes on consumption. These taxes do not distort the relative price of consumption in the current period in relationship with the future, leaving unchanged the desire of accumulation of capital.

Shell (1967), Grossman and Helpman (1991) considered models of technological progress in which government collects taxes and uses the proceeds to purchase goods and services, which are used in research and development (R&D) process to create new knowledge. Since government goods generate technological progress, an increase in government purchases ratio increases the long run growth rate. However, if government raises revenue via an income tax, increases in government purchases raise the income tax rate, so the return to investment and the long run rate of growth fall. Grossman and Helpman (1991) found that an increase in government purchases increases long run growth if the government purchases ratio is small, but decreases long run growth when it is sufficiently large.

Empirically, Ocran (2009), studied the impact of fiscal policy variables on economic growth in South Africa over the period 1990-2004. It was found that government consumption expenditure has a significant positive effect on economic growth. Gross fixed capital formation from government also has a positive impact on output growth but the size of the impact is less than that attained by consumption expenditure. Tax receipts also have a positive effect on output growth. However, the size of the deficit had no significant impact on growth outcomes.

Twumasi (2012) employed autoregressive distributed lag (ARDL) model to investigate the impact of fiscal policy on economic growth in Ghana covering the periods of 1981 -2008. The study found that there existed long-run impact of fiscal variables on economic growth. Empirical results indicated that in the long-run government investments and government transfer payments positively related to economic growth whilst those of taxes and government consumption spending were found to be negative. Likewise the long-run, government investments and transfer payments were realised to

have positive effects on economic growth in the short-run. It was also discovered that taxes and government consumption spending have insignificant effects on short-run economic growth.

Akosah (2013) investigated the threshold effect of budget deficit on economic growth in Ghana, using quarterly data from 2000–2012. The approach of vector error correction models and ordinary least squares were employed. The study found an inverse long run relationship between budget deficit and economic growth, especially as the deficits have often been used to finance recurrent expenditures, suggesting that high budget deficit, driven by recurrent expenditures, slows down economic growth. In terms of components, while tax revenue and recurrent expenditure were found to retard long run economic growth, capital expenditure was found to boost long run growth. Likewise, increasing public debt and its components were found to reduce long run economic growth.

Havi and Enu (2014) employed Ordinary Least Squares (OLS) estimation technique to investigate the relative importance of monetary and fiscal policies on economic growth in Ghana from 1980 to 2012. The study aimed at examining which of these two policies was more potent in enhancing economic growth in Ghana. The researchers found that monetary and fiscal policies both had positive influence on the Ghanaian economy. Meanwhile, the results showed that monetary policy was more powerful in promoting economic growth in the country. It was therefore suggested to the Bank of Ghana to implement monetary policies to 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.

Osuala and Ebieri (2014) applied the General- to-specific approach to Autoregressive Distributed Lag (ARDL) model to provide empirical analysis of the impact of fiscal policy on economic growth for the periods of 1986 to 2010. The results indicated that, there was long-run relationship between fiscal growth and economic growth in Nigeria. The study disclosed that government recurrent and capital expenditures have significant positive influence on economic growth, whereas non-oil taxes and government total debts have insignificant effect on economic growth. The researchers suggested to the government to channel its debts towards provision of critical infrastructure with the intention of providing the enabling investment environment, while fiscal policy should be complemented with the use of effective monetary policy.

Srithongrung and Sanchez-Juarez (2015) examined the impact of fiscal policies on subnational economic growth in Mexico. The study used subnational government finance data during the period of 1993 to 2011 which were drawn from thirty two (32) Mexican States. Using budget constraint model together with Error Correction Model (ECM), the results suggested that taxes negatively relate to economic growth in transitory and permanent manners. In consonant with economic theory, the study showed that in both short-run and long-run, the effects of government investment have statistically positive significant relationship with subnational economic growth. Generally, the study findings implied that appropriate fiscal policy must be put in place to enhance economic growth in Mexico.

Igwe, Edeh, and Ukpere (2015) through their study titled "Impact of Fiscal Policy Variables on Economic Growth in Nigeria", used Johansen cointegration and vector error correction model to investigate the effect of fiscal policy variables such as capital expenditure, recurrent expenditure, and direct income tax on economic growth for the periods of 1970 to 2012. The empirical results suggested that in the long-run, capital and recurrent expenditures were positively related, whereas direct income tax was negatively related and statistically significant in determining economic growth in Nigeria. The granger causality test indicated that there existed no causal relationship between any of the fiscal policy variables and economic growth. The study therefore suggested the adoption of tax policies that would stimulate growth instead of retarding growth with a wide margin, as has been detected from the study.

Babalola (2015) in his study investigated the impact of fiscal policy on economic development in Nigeria during the period between 1981 and 2013. The study proxied government recurrent expenditure, government capital expenditure, government investment and tax revenue for fiscal policy whereas economic development was proxied by real per capita income. Using Johansen cointegration

and error correction mechanism, the findings indicated that government recurrent expenditure and government investment related positively and had significant impact on economic development in both shot-run and long-run within the period studied. The study further realised that the capital expenditure had positive effect on economic development in the short run, but not in the long run. Tax revenue was found to have indirectly relationship with economic development and it was significant in both short run and long run.

In the study carried out by Macek and Janku (2015), methods and tests of panel regression were used to examine the impact of fiscal policy on economic growth depending on institutional conditions in the OECD countries covering the period between 2000 and 2012. It was obvious from the results that there existed positive relationship between government spending and economic growth in the countries with lower fiscal transparency, whereas there was negative relationship between government spending and economic growth in the countries with higher fiscal transparency. The study showed the evidence of negative relationship between taxation and economic growth in the countries with worse institutional conditions.

3. Methodology

In order to establish the relationship between fiscal policy variables and economic growth, the study applied Granger causality test within the framework of cointegration and vector error correction models. The estimation procedures involved the following steps. Firstly, the study investigated the stationarity of the variables concerned by using the Augmented Dickey–Fuller (ADF) and the Phillip-Perron (PP) tests. In addition, the study adopted the Johansen's maximum likelihood econometric methodology for cointegration introduced by Johansen (1988), Johansen and Juselius (1990) and Johansen (1991) to obtain both the short and long-run estimates of the variables involved. In the third step, the study employed Granger-causality test to ascertain the exact relationship between fiscal policy variables and economic growth after establishing a cointegrated relationship among them. The net effect was carried out among the fiscal policy variables. All estimations were carried out using Econometric views (Eviews) 7.0 package and Oxmetrics.

Following Fosu and Magnus (2006), Sakyi (2011), and Mansouri, (2005) the model used for this study was specified as follows:

$$Y_t = A_t K_t^\alpha L_t^\beta 1^\varepsilon \tag{1}$$

The growth model was modified to include the variables under study.

$$\Delta lnY_t = \beta_0 + \beta_1 \Delta lnGC_t + \beta_2 \Delta lnGI_t + \beta_3 \Delta lnTP_t + \beta_4 \Delta lnTR_t + \beta_5 \Delta lnCPI_t + \alpha \Delta lnK_t + \delta \Delta lnL_t + \varepsilon_t \tag{2}$$

For the expected sign of the coefficients: $a > 0, \delta > 0, \beta_1 < 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 < 0$.
The short run model for this study was expressed as:

$$\Delta \ln Y_t = \beta_0 + \sum_{i=1}^{p} \theta \Delta \ln Y_{t-i} + \sum_{i=1}^{q} \beta_1 \Delta \ln GC_{t-i} + \sum_{i=1}^{r} \beta_2 \Delta \ln GI_{t-i} + \sum_{i=1}^{s} \beta_3 \Delta \ln TP_{t-i} + \sum_{i=1}^{t} \beta_4 \Delta \ln TR_{t-1} +$$

$$\sum_{i=1}^{u} \beta_5 \Delta \ln CPI_{t-i} + \sum_{i=1}^{v} \alpha \Delta \ln K_{t-i} + \sum_{i=1}^{w} \delta \Delta \ln L_{t-i} + \psi ECT_{t-i} + v_t \tag{3}$$

A_t is Total Factor Productivity (TFP) at time t. This TFP represents other factors that account for growth other than capital and labour. In other words, TFP represents output growth not accounted for by the growth inputs, K_t is private capital and L_t is labour force. Y_t is proxied by real gross domestic product, GC_t is government consumption expenditure, GI_t is government investment expenditure, TP_t government transfer payment, TR_t is Tax revenue and CPI_t is Consumer Price Index. 'ln' is the natural logarithmic operator, Δ is difference operator and ECT_{t-1} is error correction term lagged one period. The coefficients $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \alpha$ and δ are the elasticities of the respective

variables, with ψ showing the speed of adjustment, β_0 is the drift component, t denotes time and ν_t is the stochastic error term.

The study employed secondary data. Quarterly time series data were generated from the annual time series collected from 1983 to 2012 using Gandolfo (1981) algorithm. The series were drawn from World Development Indicators and Ministry of Finance and Economic Planning fiscal data.

4. Empirical Results and Discussions
4.1 Test for Stationarity

The findings of the study were sub headed based on the objectives of the study. To investigate the time series properties of the data the Augmented Dickey–Fuller (ADF) and the Phillip-Perron (PP) tests was used to check the stationarity position of the data. The results are shown in Table 1.

Table 1:   Results of Unit Root Test

VARIABLE	ADF		PP		IO
	LEVEL		LEVEL		
	TREND	P-VALUE	TREND	P-VALUE	
LRGDP	-5.8471	0.3121	-10.3771	0.4133	
LGC	-2.8274	0.1906	-2.2995	0.4306	
LGI	-3.1741	0.2947	-3.5145	0.2042	
LTP	-1.7095	0.7411	-2.1503	0.5123	
LTR	-1.7803	0.7081	-1.8018	0.6979	
LCPI	-1.8058	0.6959	-3.6344	0.3110	
LK	-1.1647	0.5041	-2.3221	0.4017	
LLBF	-1.5433	0.8085	-3.0761	0.1172	
VARIABLE	ADF		PP		IO
	FIRST DIFFERENCE		FIRST DIFFERENCE		
	TREND	P-VALUE	TREND	P-VALUE	
DLRGDP	-7.7598	(0.000)	-14.3902	(0.000)	I(1)
DLGC	-6.5226	(0.000)	-8.6765	(0.000)	I(1)
DLGI	-11.7001	(0.000)	-11.1897	(0.000)	I(1)
DLTP	-7.5030	(0.000)	-10.9866	(0.000)	I(1)
DLTR	-7.7669	(0.000)	-10.1648	(0.000)	I(1)
DLCPI	-4.9311	(0.000)	-6.9387	(0.000)	I(1)
DLK	-5.7629	(0.000)	-11.4890	(0.000)	I(1)
DLLBF	-3.4566	(0.000)	-3.3640	(0.000)	I(1)

Note: *IO* represents Order of Integration and D denotes first difference. *** represents significance at the 1% level.
         Source: Computed using Eviews 7.0 Package.

Table 1 showed that, at first difference all the variables are stationary and the null hypothesis of the existence of unit root is rejected. The study therefore rejected the null hypothesis of the existence of unit root in D (LRGDP), D(LGC), D(LGI), D(LTP), D(LTR), D(LCPI), D(LK) and D(LBF) at the 1 percent level of significance.

4.2 The Long Run Relationship of Fiscal Policy Variables on Economic Growth

The estimated long-run equilibrium relationship for economic growth (real GDP) was derived from the unnormalised vectors. The results are presented in Table 2.

Table 2: Un-Normalized Cointegrating Coefficients (Long run relationships)

LNRGDP	LNGC	LNGI	LNTP	LNTR	LNCPI	LNK	LNLBF	TREND
-22.795	-0.8617	-0.4077	1.6854	0.4563	-0.8861	-0.5712	-45.619	0.3320
53.287	1.9017	0.6202	-3.2918	0.7172	2.3265	1.0587	-36.002	-0.7546
-30.321	-0.0684	3.2358	-3.5279	-1.6889	-4.7874	0.2353	27.481	0.7120
12.942	-3.7741	-1.3470	0.6587	-0.3022	4.8867	0.7468	-21.925	0.1013
2.9708	-0.9673	-1.8438	2.3705	0.4288	-2.6815	-0.0501	-9.5143	-0.0787
0.8099	2.9924	-0.8568	2.1666	-0.4716	-2.9504	0.3876	0.5192	0.0821
3.6148	0.7470	-1.5846	-0.4208	-1.3613	0.1842	-0.9910	-12.007	0.0613
-25.702	0.2119	-0.6541	-0.6466	-0.2535	0.5399	0.5058	17.914	0.3155

Source: Computed using Eviews 7.0 Package

The seventh vector appeared to be the one on which we can normalize the real GDP from the unnormalised cointegrating coefficients in table 2. The choice of this vector was based on sign expectations about the long- run effects.

The long run effect was specified as:

$$LRGDP = 0.0169T - 0.2067LGC + 0.4384LGI + 0.1164LTP + 0.3766LTR - 0.0510LCPI + 0.2741LK + 3.3217LLBF$$

The results revealed a constant term of 0.0169. This means that real GDP of Ghana grows by about 1.69% each quarter holding all other factors constant in the long run. This can be explained by the fact that technology and institutional changes cause changes in the activities of the real sector of the economy.

Government consumption spending as expected had a significant negative effect on economic growth with a coefficient of -0.2067. Thus, a 1 percent point increase in government consumption expenditures induces a fall in real GDP growth of approximately 0.21 percent. The negative sign associated with the government consumption variable supports the theoretical proposition that an increase in government consumption spending lowers the economy's steady state growth. The negative impact could be explained by the crowding-out effect usually associated with government consumption spending or can also be as a result of increased taxes and borrowings used to finance unproductive public consumption expenditures. The finding is in line with the result of Twumasi (2012), Akosah (2013). However, the finding is contrary to results of Osuala and Ebieri (2014), Igwe, Edeh, and Ukpere (2015), and Babalola (2015) who found government recurrent expenditure to be positive and significant.

Government investment spending was found to have positive and significant effect on economic growth. This implies that a 1 percent increase in government investment expenditure in the long-run would lead to 0.4384 percent increase in economic growth. Thus, the positive and significant effect of government investment expenditure on real GDP is an indication that government investment expenditure is a key channel through which we can achieve sustained economic growth. The finding is similar to Yasin (2003), Gupta *et al.* (2005), M'Amanja and Morrissey (2005), Ocran (2009), Twumasi (2012), Osuala and Ebieri (2014), Srithongrung and Sanchez-Juarez (2015), and Babalola (2015) who found a positive and a significant impact of government investment spending on economic growth.

The coefficient of government transfer payments was positive and it was 0.1164. This indicates that an increase in government transfer payments by 1 percent would induce about 0.12 percentage growth in real GDP in the long run. The long-run positive impact of government transfer payments on real GDP growth can be attributed to its positive impact on households' disposable incomes. According to the Keynesian school of thought, government transfer payments enhance GDP growth. The result is consistent with the studies conducted by Afonso and Furceri (2008), and Twumasi (2012) who revealed that government transfer payments related positively with economic growth for EU countries and Ghana respectively.

Tax revenue had a positive and significant effect on real Gross Domestic Product. The coefficient of 0.3766 implies that in the long run, a 1 percent increase in tax revenue will lead to approximately 0.38 percent increase in real GDP. The study supports the findings of Ocran (2009) in

South Africa, Ogbonna and Ebimobowei (2012) in Nigeria, but it contrasts with the findings by Twumasi (2012) in Ghana, Srithongrung and Sanchez-Juarez (2015) in Mexico, and Babalola (2015) in Nigeria.

4.3 Short Run Relationship of Fiscal Policy on Economic Growth

The study estimated the short-run equilibrium relationship for economic growth (real GDP) and the results are shown in Table 3.

Table 3: Results of Error-Correction Model (VECM) (Short run relationships)

Variable	Coefficient	Std. Error	T- Statistic	Probability
ECT(-1)	-0.212736	0.02239	-9.501385	0.0000
D(LRGDP(-2))	0.192459	0.04321	4.454038	0.0000
D(LGC(-1))	-0.042931	0.00929	-4.618223	0.0000
D(LGI(-1))	0.041752	0.01613	2.588063	0.0110
D(LTP(-2))	0.034290	0.01185	2.893671	0.0047
D(LTR(-2))	0.096360	0.01247	7.727345	0.0000
D(LCPI(-1))	-0.030896	0.01396	-2.213181	0.0292
D(LK(-2))	0.032674	0.00672	4.862202	0.0000
D(LLBF(-1))	0.274045	0.03222	8.505431	0.0000
CONSTANT	0.004147	0.00042	9.873810	0.0000
R-squared = 0.635615				
Adjusted R-Squared = 0.581499				
DW =2.034959				
F-Statistics = 11.75(0.0021)				

Source: Computed using Oxmetrics

Table 3 indicated that the estimated coefficient of the error correction term (ECT) had its expected sign and it was significant. This means that there is a joint significance of the long-run coefficients. The estimated coefficient of the error correction term is -0.212736 which implies that the speed of adjustment is approximately 21 percent per quarter. The negative and significant coefficient is an indication that cointegrating relationship exists among the variables. The size of the coefficient on the error correction term (ECT) denotes that about 21 percent of the disequilibrium in the product market caused by previous years' shocks converges back to the long-run equilibrium in the current year.

The current value of real Gross Domestic Product was affected by the past quarter value of real GDP. Specifically, real GDP at lag two was significant with a coefficient of 0.192459. It shows a positive effect on real GDP in the second quarter. If there is a 1 percent increase in past real GDP, the current real GDP will rise by about 0.19 percent. This is expected in that, previous growth and expansion of the economy serves as an indication of prosperity and may attract more investment leading to more growth. The result is consistent with the finding of Ocran (2009).

Government consumption expenditure was significant at lag one in the short run where it exerted a negative effect on real GDP in the previous quarter with coefficient of -0.042931. Thus in the previous quarter, 1 percent increase in GC would lead to about 0.04 percent fall in current year real GDP. This is consistent with long run finding. The negative sign associated with the government consumption variable supports the theoretical proposition that an increase in government consumption spending lowers the economy's steady state growth. The negative impact could be explained by the crowding-out effect usually associated with government consumption spending or can also be as result of increased taxes and borrowings used to finance unproductive public consumption expenditures. Twumasi (2012) and Osuala and Ebieri (2014) found that government consumption expenditure retarded economic growth. However, Babalola (2015) indicated that government consumption expenditure boosted economic growth.

Government investment expenditure was significantly positive at lag one in the short run where it triggered real GDP to rise by 0.041752. It shows a positive effect on real Gross Domestic Product in the first quarter. The small coefficient can be attributed to the proposition that investments have long gestation period. This is expected in that, previous growth and expansion of the economy serves as an indication of prosperity and may attract more investment leading to more growth. The sign of the investment variable support the theoretical conclusion that capital contributes positively to growth of Gross Domestic Product both in the short and long-run since the coefficient of capital in the period is positive and significant. The study is similar to the finding of Babalola (2015), but it was found to be in contrast with Osuala and Ebieri (2014) whose result was negative.

In addition, transfer payment was positive and significant at lag 2. Thus, one percent increase in transfer payment in the previous two quarters will cause growth in real Gross Domestic Product to rise by 0.034290 percent in the second quarter. A short-run change in transfer payment exerts a positive and statistically significant impact on economic growth. This means that an increase in transfer payment in the short-run exerts a positive impact on economic growth. It can also be explained that the transfer payment received are used on goods and services in the short period. The result is in agreement with outcome of Twumasi (2012) who also found positive relationship between government transfer payment and economic growth.

Tax revenue was also significant at lag two in the short run where it exerted a positive effect on real Gross Domestic Product with coefficients of 0.096360. Thus, 1 percent increase in long tax revenue would lead to about 0.10 percent increase in real Gross Domestic Product in second quarter. The positive effect is in line with the fact that tax revenue generated by the government will be used for infrastructural development into the various sectors of the economy which will lead to increase in output. This is in contrast with the finding of Babalola (2015) who found a negative and significant effects of tax revenue on economic growth in the short-run.

4.4 Granger Causality Test

To determine the direction of causality between fiscal policy variables and economic growth, the study conducted a pair wise Granger causality test using lag 2. The results of the Granger causality test are presented in Table 4.

Table 4: Results of Granger Causality Test

Null Hypotheses	F-Statistics	Probability
LGC does not Granger Cause LRGDP	2.49109	0.1874
LRGDP does not Granger Cause LGC	4.69384	0.0110**
LGI does not Granger Cause LRGDP	5.75221	0.0042***
LRGDP does not Granger Cause LGI	2.76369	0.1473
LTP does not Granger Cause LRGDP	2.34800	0.0581*
LRGDP does not Granger Cause LTP	2.92378	0.1002
LTR does not Granger Cause LRGDP	5.39781	0.0061***
LRGDP does not Granger Cause LTR	4.94322	0.1087
LCPI does not Granger Cause LRGDP	1.73231	0.1815
LRGDP does not Granger Cause LCPI	2.86449	0.0412**
LK does not Granger Cause LRGDP	2.64432	0.0344**
LRGDP does not Granger Cause LK	3.32946	0.00246***
LLBF does not Granger Cause LRGDP	5.61600	0.0004***
LRGDP does not Granger Cause LLBF	3.61557	0.0303**

Note: *, ** and *** denote rejection of null hypothesis at 10%, 5% and 1% level

The results in Table 4 showed unidirectional causality between economic growth and government consumption at 5 percent level of significance. This supports the theoretical proposition that an increase in government consumption spending lowers the economy's steady state growth. The impact could be explained by the crowding-out effect usually associated with government consumption

spending or can also be as result of increased taxes and borrowings used to finance unproductive public consumption expenditures. An increase in economic growth would enable the government to generate more revenue through taxation for its consumption. This finding is however, contrary to the result of M'Amanja and Morrissey (2005) who found weakly bi-directional causality.

From the results in Table 4, there existed unidirectional causality from government investment to economic growth at 1 percent. It explains the fact that investment in productive capital is a real booster for every economy including that of the Ghanaian economy. This is consistent with the finding of M'Amanja and Morrissey (2005) who found unidirectional causality between government investment and economic growth in Kenya.

Again, Table 4 indicated a unidirectional causality between transfer payment and economic growth at 10 percent significance level. According to the Keynesian, government transfer payments enhance Gross Domestic Product growth. The impact of government transfer payments on real Gross Domestic Product growth can be attributed to its positive impact on households' disposable incomes.

The results of the granger causality test in Table 4 showed uni-directional causality between tax revenue and economic growth at 1 percent level of significance. This means that tax revenue causes economic growth at 1 percent. In other words, it means that tax revenue predicts real economic growth but not the other way round in the case of Ghana. This finding is consistent with that of Chigbu, Akujuobi, and Ebimobowei (2012) who found unidirectional causality between taxation and economic growth in Nigeria.

4.5 Result of Net Effect on Economic Growth

From the long run, the study sought to find the net effect of the fiscal policy variables on economic growth. The net effect was generated from the long run equation by adding all the positive fiscal policy variables (government investment expenditure, transfer payment, tax revenue) and subtracting it from the negative fiscal policy variable (government consumption expenditure).

$$LRGDP = 0.0169T + 0.7247NE - 0.0510LCPI + 0.2741LK + 3.321LLBF$$

In the equation above, the net effect (NE) was positive. This shows that, real gross domestic product will increase by 0.72 if there is 1 percent increase in government investment expenditure, transfer payment and tax revenue. This implies that government should increase its spending in terms of investment and transfers so as to enhance economic growth.

5. Conclusion and Policy Implications

From the study, government consumption expenditure had negative significant long-run effect on economic growth in Ghana. The study also found a positive and significant effect of government investment expenditure on real Gross Domestic Product both in the long run and short run. Government transfer payment, tax revenue, private capital and labour force exerted a positive and statistically significant effect on economic growth. The Granger causality test results revealed a uni-directional relationship between government consumption expenditure, government investment expenditure, transfer payment, tax revenue and economic growth. The study finally realised a positive and significant net effect on real GDP in the long run.

Based on the findings of this study, the following recommendations were made:

First, the government of Ghana needs to invest in productive sectors and also introduce policies that would protect and enhance private investments. Thus, government needs to create conducive business environment for the private sector so as to ensure easy access of funds for investment.

Further, despite the significant role of government consumption expenditure in welfare advancements, it has been detrimental to economic growth. For it to enhance growth, there is the need for policy makers to examine its compositions. Measures should be tailored towards reducing government consumption expenditures.

Also, government needs to put in more efforts in revenue mobilisation since tax revenue serve as a source of funding for government expenditure in undertaking infrastructure development. This is as a result of the positive effect of tax revenue on economic growth. Government should put in place measures to eliminate evasion of tax and also include more contributions from the formal and informal sectors.

References

[1]   Afonso, A. & Furceri, D. (2008). *Government size composition, volatility and economic growth.* Working Paper Series, European Central Bank, No 849.

[2]   Akosah, N. K (2013). Threshold effect of budget deficits on economic growth in Ghana. Working Paper, Research department, Bank of Ghana.

[3]   Babalola, A.I. (2015). Fiscal Policy and Economic Development in Nigeria. Journal of Economics and Sustainable Development. Vol. 6(7).

[4]   Derin, N. (2003). Endogenous growth testing in the European Union and developing countries: taxation, public expenditure and growth. Master degree thesis, Middle East Technical University

[5]   Dornbusch, R. S., & Fischer, R. (1990). Macroeconomic, USA: *The McGraw-Hill Companies, Inc.*

[6]   Easterly, W. & Rebelo, S. (1993). "Fiscal policy and economic development: An empirical investigation", *Journal of Monetary Economics,* 32:417-458.

[7]   Feder, G. (1983). On exports and economic growth. *Journal of development economics , 12*, 59-73.

[8]   Fosu, A., & Magnus, F. J. (2006). Bounds testing approach to cointegration: An examination of foreign direct investment, trade and growth relationships. *American Journal of Applied Sciences , 3*, 2079-2085.

[9]   Gandolfo, G., Martinengo, G., & Padoan, P. C. (1981). *Qualitative analysis and econometric estimation of continuous time dynamic models.* North-Holland publishing company.

[10]   Grossman, G. M. & Helpman, E., (1991). Quality ladders in the theory of growth. *Review of Economic Studies* 58, 43–61.

[11]   Gupta, S., Clements B., Baldacci E., & Mulas-Granados, C. (2005). "Fiscal policy, expenditure composition and growth in low-income countries". *Journal of International Money and Finance, 24.*

[12]   Havi, E.D.K; & Enu, P. (2014). The Effect of Fiscal Policy and Monetary Policy on Ghana's Economic Growth: Which Policy Is More Potent? International Journal of Empirical Finance. Vol. 3(2), 61-75

[13]   Igwe, A; Edeh, C.E.; & Ukpere. W.I. (2015). Impact of Fiscal Policy Variables on Economic Growth in Nigeria (1970-2012): A Managerial Economics Perspective. Investment and Financial Innovations. Vol. 12. Issue 2.

[14]   Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica: Journal of the Econometric Society , 51*(6), 1551-1580.

[15]   Johansen, S., & Juselius, K. (1990). Testing structural hypotheses in a multivariate cointegration analysis of the PPP and the UIP for UK. *Journal of econometrics , 53*, 211-244.

[16]   King, R. G. & Rebelo, S. (1993). Public policy and economic growth: Developing neoclassical implications. *Journal of Political Economy*, 98, pp. 126-50.

[17]   Kusi, N. K. (1998). *Tax reform and revenue productivity in Ghana.* African Economic Research Consortium, Nairobi – Kenya.

[18]   M'Amanja, D. & Morrissey, O. (2005). Fiscal policy and economic growth in Kenya. *Credit Research Paper No.05/06.*

[19]   Macek, R; & Janku, J. (2015). The impact of fiscal policy on economic growth depending on institutional conditions. Available Online at http://www.slu.cz/opf/cz/informace/acta-academica-karviniensia/casopisy-aak/aak-rocnik-2015/docs-2-2015/Macek_Janku.pdf

[20]   Mansouri, B. (2008). "Fiscal policy and economic growth: Egypt, Morocco and Tunisia compared". *Proceeding in UNECA Conference on: Macroeconomic policy, productive capacity and economic growth in Africa. Addis Ababa*, Lucas, J. R. E. (1988). Supply-side economics: an analytical review. *Oxford Economic Papers,* 42(2).

[21]   Ocran, K. M. (2009). *Fiscal policy and economic growth in South Africa.* A paper presented at the Centre for the study of African Economies "Conference on economic development in Africa", St. Catherine's College, Oxford University, UK. March 22-24, 2009.

[22]   Ogbonna, G., & Ebimobowei, A. (2012). Impact of petroleum revenue and the economy of Nigeria. *The Social Sciences, 7*, 405-411.

[23]   Osuala, A.E; & Ebieri, J. (2014). Empirical Analysis of the Impact of Fiscal Policy on Economic Growth in Nigeria. International Journal of Economics and Finance. Vol. 6(6).

[24]   Romer, P. (1987). *Endogenous technical change.* Journal of Political Economy, 98, 71-102

[25]   Sakyi, D. (2011). Trade Openness, foreign aid and economic growth in post-liberalization in Ghana: An application of ARDL bounds test. *Journal of Economics and International Finance , 3*, 146-156.

[26]   Shell, K. (1967). Essays on the theory of optimal economic growth. *Cambridge, Mass. M.I.T. Press*.

[27]   Solow, R. M. (1956). A contribution to theory of economic growth. *Quarterly Journal of Economics,* 71.

[28]   Srithongrung, A; Sanchez-Juarez, I. (2015). Fiscal Policies and Subnational Economic Growth in Mexico. International Journal of Economics and Financial Issues. Vol. 5 (1), 11-22.

[29]   Twumasi, R.A. (2012). The Impact of Fiscal Policy on Economic Growth in Ghana: Unpublished Master's Thesis Submitted to the Department of Economics, Kwame Nkrumah University of Science and Technology.

[30]   Yasin, M. (2003). *Public spending and economic growth: Empirical investigation of Sub-Saharan Africa*. Economic Review, 59-68.

Appendix
Evaluation of the Models

Table 5:   Diagnostic Test for LRGDP Model

Diagnostic	Statistic	Conclusion
Ramsey Reset Test	F-statistic = 0.422145 (0.5175) Log likelihood ratio = 0.493653 (0.4823)	Equation is correctly specified
ARCH Test	F-statistic=1.0687 (0.3469) Obs*R-squared 2.1536(0.3407)	There is no ARCH element in the residual.
Breusch-Godfrey Serial Correlation LM Test	F-statistic 0.9144(0.5084) Obs*R-squared 8.1100 (0.4228)	No serial correlation
Multivariate Normality	Jackque-Bera test=0.830113 p-value = 0.6603	Residuals are normal