The Intervening Influence of Economic Growth on Fiscal Policy Stance and Public Expenditure in Kenya

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Abstract: *This paper investigates the intervening influence of economic growth on the relationship between fiscal policy stance and public expenditure in Kenya from 1964 to 2015 using a Vector Error Correction Model. The results indicate that economic growth has an intervening influence on the relationship between fiscal policy stance and public expenditure in Kenya. The findings further show that fiscal policy, economic growth and public expenditure are cointegrated using the Johansen test and the bound test but there is no short-run causality between the variables as indicated by the Wald test statistics. The findings suggest that economic growth explains the extent to which fiscal policy stance affects the level of public expenditure in Kenya even though fiscal policy stance has a negative relationship with public expenditure.*

Keywords: Fiscal policy stance, public expenditure, economic growth

Introduction

There have been growing concerns for governments to prudently and effectively utilise public resources the world over especially in developing countries where transparency and accountability in public spending have been a major challenge. This is considering that there are limited resources yet there are numerous public demands. It is expected that a government would effectively use fiscal policy as a tool to control the level of public expenditure in any given economic environment regardless of whether an economy is at a boom or recession. Therefore this study seeks to answer the question of whether economic growth in a country can influence the effect of fiscal policy stance on the level of public expenditure. Public expenditure can be described as the expenses incurred by a government in order to sustain its citizens and the economy as a whole. Barro and Grilli (1994) and Njeru (2003) generally explain that public expenditure entails government expenses on various activities and it can be classified as recurrent expenditure and development expenditure.

Fiscal policy is a tool used by a government in order to control the level of public expenditure as it aims to redistribute and reallocate resources while enhancing stability in an economy. Fiscal

policy stance can either be contractionary or expansionary. On the other hand, economic growth refers to the level of gross domestic product (GDP) growth in an economy or a country. The analysis of economic growth cycles is a method that can explain economic conditions in an economy. Pailwar (2008) indicates that economic conditions can be explained by economic growth cycles in terms of boom, recession and depression. A boom is when an economy expands but the rate of growth is higher than the rate of growth at full employment level of output while a recession is when the actual growth rate is lower than the growth rate at the full employment level. A depression can be described as the acute and severe contraction of economic activities. During a boom, it is expected that public expenditure would increase steadily as argued by Wagner's Law of increasing state activities while in a recession public expenditure is expected to be declining. Therefore Wagner's law seems to support pro-cyclicality of public expenditure which has been the case in developing economies. However, in developed economies, public expenditure has been countercyclical whereby it has been declining during booms and it has resulted in enhancing economic stability (Alesina and Tabellini, 2005).

In the finance empirical literature, the relationship between fiscal policy stance and public expenditure is inconclusive and insufficiently studied except a few studies such as Brownbridge and Canagarajah (2008) and Stancik and Valila (2012) with the findings of these studies generally arguing that fiscal policy stance affects public expenditure. It is also notable that the intervening influence of economic growth on the relationship between fiscal policy stance and public expenditure has not been examined in the existing empirical literature apart from extensive studies done on the relationship between economic growth and public expenditure. In fact, there has been a long debate in the public finance literature on whether economic growth affects public expenditure or vice versa. These contrasting notions were put across by Wagner (1863) while explaining the Law of increasing state activities by arguing that economic growth would affect public expenditure. Also, Peacock and Wiseman (1961) seem to concur with Wagner's Law. However, Keynes (1936) argued that public expenditure would affect economic growth especially through borrowing money from the private sector and then returning it to them through various spending programmes.

There is insufficient evidence on the intervening effect of economic growth on the relationship between fiscal policy stance and public expenditure from the existing finance literature. Therefore this paper aims to examine the intervening influence of economic growth on the relationship between fiscal policy stance and public expenditure in Kenya. This paper is divided into the following sections: introduction, literature review, research methodology, data analysis and conclusion.

Literature Review

There are various studies that have been undertaken to examine the relationship between fiscal policy and economic growth. For instance, Semmler et al. (2007) using time series modelling argue that the scope of the fiscal policy to influence economic growth depends on the underlying model of growth but studies done by Temple (2003); Glomm and Rioja (2006) while supporting the Solow (1956) model of growth, view fiscal policy as having an insignificant influence on long-term growth. This implies that there are divergent research findings as to the extent to

which fiscal policy would influence economic growth. However, Temple (2003) argues that the scope for policy to have an influence on the level of output should merit the attention of policymakers and analysts but has been neglected because of a misguided focus on effects on the long-term growth rate and an undervaluation of level effects. Also, Tanzi and Zee (1996) analysed fiscal policy by reviewing the literature and concluded that despite the lack of robust empirical results, fiscal policy could affect long-run growth performance of countries.

On the other hand, Greiner et al. (2005) argue that a time series perspective on economic growth may be more useful to pursue in designing growth strategies since it would ultimately allow the use of econometric time series methods and drafting important implications for growth policies. Hence most studies such as M'Amanja and Morrisey (2005); Perotti (2007); Semmler et al. (2007) while analysing the effect of fiscal policy on economic growth have adopted time series techniques in data analysis. However, Tanzi and Zee (1996) used a literature review perspective to recommend that fiscal policy can affect economic growth while Brownbridge and Canagarajah (2008) have used a descriptive research approach to examine fiscal policy for growth in Tajikistan. The study concludes that fiscal policy must play a greater role in strengthening the supply side of the economy through the delivery of key public services which can complement private investment and enhance human capital.

M'Amanja and Morrisey (2005) sought to test the effect of fiscal policy on economic growth in Kenya from 1964 to 2002 using a time series techniques known as the autoregressive distributed lag (ARDL) model. The findings indicate that productive government expenditure has strong adverse effects on growth while government investment was found to be beneficial to growth in the long run. However, Perotti (2007) while using the structural vector autoregression approach (SVAR) faults the use of Granger causality tests used by M'Amanja and Morrisey (2005) because the methodology fails to capture the structural shocks on fiscal policy and that indicates challenges of identification and definition of the relevant variables. On the other hand, Semmler et al. (2007) used a calibration technique to establish the use of fiscal policy in promoting economic growth and the findings are that foreign aid per capita and the productivity factor have a positive and linear effect on per capita GDP and welfare.

The empirical literature on the relationship between public expenditure and economic growth presents mixed findings. For instance, studies undertaken by Barro (1991) and Romer (1990) found that public expenditure affects economic growth hence supporting the Keynesian view. Similarly, Sakyi and Adams (2012) using ARDL and cointegration approach from 1960 to 2008 in Ghana found that democracy and government spending have a positive effect on economic growth in the short run and long run. Gurgul and Lach (2010) using linear and nonlinear Granger causality tests from the first quarter of 2008 to the third quarter of 2008 in Poland found that total public expenditure affects economic growth. However,in the analysis of sub-categories of public expenditure and economic growth, mixed results were reported in the study by Gurgul and Lach in 2010. That is expenditure on net interest payments affected economic growth, other remaining expenditure was affected by economic growth while expenditure on human resources and physical resources was found to have no effect on economic growth.

Various studies such as Srinivasan (2013) using Error Correction Model (ECM) and cointegration from the period 1973 to 2012 in India, report that economic growth affects public expenditure hence in support of the Wagner's law of increasing state activities. However, we have studies that find no significant relationship between economic growth and public expenditure. For instance, Bagdigen and Cetintas (2003) investigated the relationship between economic growth and public expenditure in Turkey using Granger causality tests and found no causality in both directions. Similarly, studies on components of public expenditure such as education and defence do not have a significant relationship with economic growth. Deskins et al. (2010) using a series of fixed effects regressions from 1992 to 2002 in the US using panel data found that education spending does not have a significant relationship with economic growth. Also, Heo (2010) using augmented Solow model from 1954 to 2005 in the US found that defence spending does not significantly affect the US economy. However, Dao (2012) using simultaneous equation modelling from 2008 to 2010 in selected developing economies found that health spending affects the growth of an economy.

Methodology

This paper adopted the causal research design since it enabled the determination of the cause and effect in examining the influence of economic growth on the relationship between fiscal policy stance and public expenditure in Kenya. The study population period was 1964 to 2015 since it captured the universe of these variables in Kenya. Secondary data on fiscal policy, economic growth and public expenditure were collected from Kenya National Bureau of Statistics (KNBS) economic surveys, statistical abstracts and annual budget estimates books.

The data collected were analysed using descriptive and inferential statistics where it involved a description of the data, undertaking of diagnostic tests and finally time series modelling. In establishing the influence of economic growth on the relationship between fiscal policy stance and public expenditure, three steps were involved in testing the intervening influence according to the Baron and Kenny (1986) approach. The first step involved regressing fiscal policy stance against public expenditure using a VECM model as follows;

$$PExp_t = \propto_{10} + \propto_{11} PExp_{t-1} + \propto_{12} FP_{t-1} + \varepsilon_{1t} \quad \textbf{(1)}$$

Where:
$PExp_t$ = Public Expenditure
$PExp_{t-1}$ = Lagged Public Expenditure
FP_{t-1} = Fiscal Policy Stance
α_{10} = The Constant or Intercept
α_{11} = Model Coefficient of the Lagged Public Expenditure
α_{12} = Model Coefficient of Fiscal Policy Stance
ε_{1t} = Error Term or Structural Shock

The second step involved regressing fiscal policy stance against economic growth using a VECM model as follows;

$$FP_t = \propto_{10} + \propto_{11} EG_{t-1} + \propto_{12} FP_{t-1} + \varepsilon_{1t} \quad \textbf{(2)}$$

Where:
FP_t = Fiscal Policy Stance
FP_{t-1} = Lagged Fiscal Policy Stance
EG_{t-1} = Economic Growth
α_{10} = The Constant or Intercept
α_{11} = Model Coefficient of Economic Growth
α_{12} = Model Coefficient of Lagged Fiscal Policy Stance
ε_{1t} = Error Term or Structural Shock

The final step involved regressing fiscal policy stance and economic growth on public expenditure using a VECM model as follows;

$$PExp_t = \beta_0 + \beta_1 PExp_{t-1} + \sum_{i=1}^{m} \gamma_i X_{it} + \varepsilon_t \quad \textbf{(3)}$$

Where:
$PExp_t$ = Public Expenditure
$PExp_{t-1}$ = Lagged Public Expenditure
X_{it} = Economic Growth, Fiscal Stance
β_0 = The Constant or Intercept
β_1 = Model Coefficient of the Lagged Public Expenditure
γ_i = Model Coefficients of Economic Growth, Fiscal Stance
ε_t = Error Term or Structural Shock

Data Analysis

Data Description

Time series annual data was collected from KNBS reports from 1964 to 2015. The description of data commences with a trend on public expenditure as shown in Figure 1.

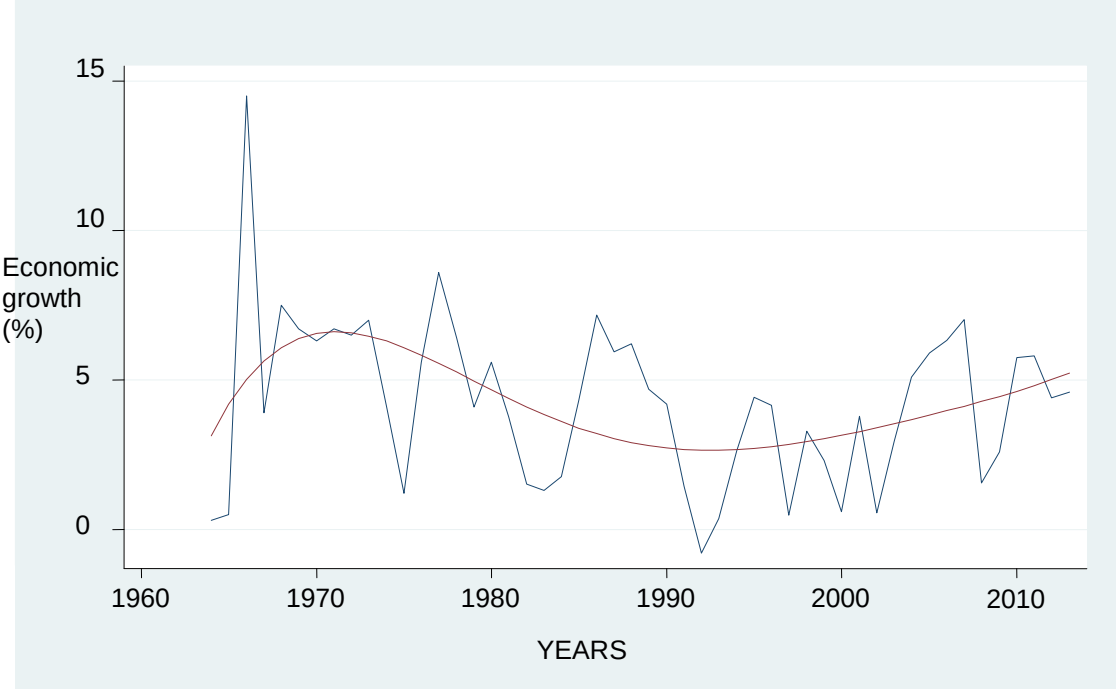

Figure 1. Economic Growth Cycles in Kenya, 1964 – 2015

The trend on the economic growth in Kenya as measured by GDP growth rates from 1964 to 2015 is presented in Figure 1. The economic growth cycle as shown in Figure 1 was generated using non-parametric analysis which involves local polynomial smoothing. The trend indicates when the Kenyan economy is at a boom, recession or depression where the peaks represent the booms while the troughs represent the depressions. The trend line in Figure 1 represents the full employment line or potential GDP. The trend line usually depicts the full employment level of output over a period of time. In summary, the line is the long run growth path for GDP (Pailwar, 2008).

Figure 1 represents the economic growth cycles in Kenya from 1964 to 2015 and the same diagram depicts economic growth in terms of boom, recession or depression. A boom is when the economy expands but the rate of growth is higher than the rate of growth of full employment level of output while a recession is when the actual growth rate is lower than the growth rate at the full employment level. A depression is when there is an acute and severe contraction of economic activities. Essentially from Figure 1, the peaks represent the booms; the troughs represent the depressions while recessions fall in between the peaks and troughs. The smooth curve represents the potential GDP or full employment line, which is the level of output where all the factors of production are utilized at the optimum level.

Summary Statistics

The Table 1 in the appendix indicates the summary statistics of the variables in this paper. Fiscal policy stance (budget deficit) has a mean of Ksh. 42507.66 million while fiscal policy stance (tax) has a mean of Ksh. 123379.8 million. Economic growth has a mean of 4.168 with a standard deviation of 2.69. For public expenditure, the mean is Ksh. 192760.3 million with a

standard deviation of Ksh. 294372.1 million.Fiscal policy stance, economic growth and public expenditure are positively distributed as indicated by the skewness of 2.14, 1.95, 0.92 and 1.96 respectively. This means that the distribution is skewed to the right. On kurtosis, the variables are highly peaked relative to the peakedness of a normal distribution since fiscal policy stance, economic growth and public expenditure has a value of 6.24, 5.84, 5.53 and 6.13 respectively as indicated in the appendix in Table 1. A normal distribution usually has a kurtosis value averaging three which means a value greater than three represents a highly peaked distribution.

Diagnostic Test Results

This paper employed the Augmented Dickey-Fuller (ADF) test for stationarity and Johansen test for cointegration in undertaking diagnostic tests. The stationarity tests were undertaken on fiscal policy stance (tax, budget deficit), economic growth and public expenditure in order to determine if they are stationary or non-stationary. In Table 2 in the appendix, the stationarity results indicate economic growth is stationary at level (p=0.0015) while the tax is stationary at first differencing (p=0.0000) which means that they are integrated at order zero I(0) and one I(1) respectively. On the other hand, budget deficit and public expenditure are stationary at second differencing meaning that they are integrated at order two I(2). Stationarity tests are usually undertaken so as to ensure that the data to be used has a constant mean and variance before time series modelling can be undertaken.

Cointegration tests were undertaken in order to test if the variables have a long run relationship between them. The Johansen test for cointegration was conducted using the trace statistic and maximum Eigen values. For cointegration to exist, the trace statistic should be greater than the critical values at 5% level of significance. Table 3 in the appendix indicates that fiscal policy stance, economic growth and public expenditure are cointegrated meaning that they have a long run relationship between them. It is from these cointegration results that one determines the time series model to be used implying that a VECM model is applicable since cointegration exists between the variables. Furthermore, in Table 4 in the appendix, fiscal policy stance, economic growth and public expenditure are cointegrated using the Auto Regressive Distributed Lag (ARDL) bound test for cointegration. The bound test requires one to check the f-statistic in the Wald test and compare it with the upper and lower bound values obtained from the Pesaran et al. (2001) Table. In Table 4 in the appendix, the f-statistic is 6.771846 at 5% level of significance is greater than the upper bound value of 4.85 from the Pesaran table, then there is cointegration existing between the study variables.

Model Specification

Fiscal Policy Stance, Economic Growth and Public Expenditure

The main objective of this study was to establish the influence of economic growth on the relationship between fiscal policy stance and public expenditure in Kenya. Stepwise regression was undertaken where it involved three main steps. The first step entailed regressing fiscal policy stance on public expenditure, the second step involved regressing fiscal policy stance on economic growth while the third step involved regressing fiscal policy stance and economic growth on public expenditure. The three steps were used based on mediation analysis done by Baron and Kenny (1986) and further supported by MacKinnon et al. (2002) on the key steps in

establishing if a variable has a mediating or intervening influence on a dependent to independent variable relationship. Furthermore, there can be various forms of intervening effects ranging from full mediation, partial mediation or no mediation.

According to Baron and Kenny (1986), full mediation is when the independent to dependent relationship is insignificant but the effect on the dependent variable is significant when the intervening variable is introduced. Partial mediation exists when the independent to dependent relationship is less significant compared to the relationship among the independent variable, intervening variable and the dependent variable. Lastly, no mediation is when the independent to dependent relationship is insignificant and also insignificant effect on the dependent variable when the intervening variable is introduced.

The first step of testing intervening or mediating influence involved fiscal policy stance and public expenditure whereby the model used was VECM. The results are indicated in Table 5in the appendix, where they show that the effect of fiscal policy stance on public expenditure is statistically insignificant. The second step of testing intervening or mediating influence which entailed fiscal policy stance and economic growth was established using a VECM model as determined by the existence of cointegration between the variables in a model. Pre-diagnostic checking and post-diagnostic checking was undertaken. Table 1 shows the lag length criteria/selection method used in testing the effect of fiscal policy stance on economic growth.

Table 1. Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-771.0984	NA	8.31e+10	33.65645	33.77571	33.70113
1	-590.0648	330.5831	46941845*	26.17673*	26.65377*	26.35543*
2	-586.9909	5.212178	61092833	26.43439	27.26920	26.74712
3	-573.4892	21.13315*	50941094	26.23866	27.43125	26.68541
4	-568.8531	6.651798	63224488	26.42840	27.97877	27.00917

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
LR: Likelihood Ratio
LogL: Log Likelihood
FPE: Final Prediction Error
AIC: Akaike Information Criterion
SC: Schwartz Information Criterion
HQ: Hannan-Quinn Information Criterion
Source: Researcher's Computations

From the Table 1, one (1) lag was selected since under the FPE, AIC, SC and HQ the lag value was the lowest. After the lag selection was done, the effect of fiscal policy stance on economic growth was undertaken using a VECM model. Before running the VECM model, diagnostic tests were done such as Johansen cointegration test and Stationarity test so as to ensure that the model

would generate robust results. The data were tested for Stationarity at level and if it was not stationary then it was made stationary at first differencing or second differencing. For the cointegration tests, there was cointegration between fiscal policy stance and economic growth hence a VECM model being the most appropriate model to be used. The VECM model is as shown next;

Table 2. VECM Model for Fiscal Policy Stance and Economic Growth

D(ECONG) = C(1)*(ECONG(-1) + 1.04851253678*TAX(-1) -1.03871427468E-05*BDEFIC(-1)
- 14.5272113118) + C(2)*D(ECONG(-1)) + C(3)*D(TAX(-1)) + C(4)*D(BDEFIC(-1)) + C(5)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-1.044203	0.187351	-5.573517	0.0000
C(2)	0.121683	0.139693	0.871075	0.3886
C(3)	1.555897	2.148352	0.724228	0.4728
C(4)	8.21E-06	1.58E-05	0.521292	0.6048
C(5)	-0.203948	0.461810	-0.441628	0.6610
R-squared	0.512022	Mean dependent var		0.087500
Adjusted R-squared	0.466629	S.D. dependent var		3.231798
S.E. of regression	2.360256	Akaike info criterion		4.653750
Sum squared resid	239.5448	Schwarz criterion		4.848667
Log likelihood	-106.6900	Hannan-Quinn criter.		4.727409
F-statistic	11.27967	Durbin-Watson stat		1.517122
Prob(F-statistic)	0.000002			

Source: Researcher's Computations

From Table 2, the effect of fiscal policy stance on economic growth is statistically insignificant as indicated in the p-values while the R^2 is 51.2% meaning that 51.2% of the variations in economic growth can be explained by fiscal policy stance. The *p*-value of C(1) or the constant is 0.0000 meaning that there is a long run causality running from fiscal policy stance to economic growth. The Prob. (F-statistic) is 0.000002 meaning that the model fits the data well. Short run causality was also tested using the Wald test as indicated in Tables 3 and 4.

Table 3. Wald Test for the Effect of Tax on Economic Growth

Test Statistic	Value	Df	Probability
t-statistic	0.724228	43	0.4728
F-statistic	0.524506	(1, 43)	0.4728
Chi-square	0.524506	1	0.4689

Null Hypothesis: C(3)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3)	1.555897	2.148352

Source: Researcher's Computations

As shown in Table 3, there was no short-run causality running from tax to economic growth as indicated by the *p*-value of 0.4689.

Table 4. Wald Test for the Effect of Budget Deficit on Economic Growth

Test Statistic	Value	Df	Probability
t-statistic	0.521292	43	0.6048
F-statistic	0.271746	(1, 43)	0.6048
Chi-square	0.271746	1	0.6022

Null Hypothesis: C(4)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(4)	8.21E-06	1.58E-05

Source: Researcher's Computations

As indicated in Table 4, there was no short-run causality running from budget deficit to economic growth as indicated by the *p*-value of 0.6022.

Table 5. Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	7.181737	Prob. F(1,42)	0.0105
Obs*R-squared	7.009175	Prob. Chi-Square(1)	0.0081

Source: Researcher's Computations

From the Table 5, we reject the null hypothesis that there is no serial correlation in the series residual as indicated by the *p*-value of 0.0081.

Table 6. Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.083394	Prob. F(6,41)	0.3883
Obs*R-squared	6.568740	Prob. Chi-Square(6)	0.3626
Scaled explained SS	7.753723	Prob. Chi-Square(6)	0.2567

Source: Researcher's Computations

As indicated in Table 6, we accept the null hypothesis that states that there is no heteroscedasticity as indicated by the *p*-value of 0.3626 at 5% level of significance. The corresponding R^2 is 6.568740 which is the heteroscedasticity test statistic for the null hypothesis of no heteroscedasticity. The non-existence of heteroscedasticity, in essence, means that the variance of each error term is constant.

The final step of testing intervening influence involves regressing fiscal policy stance and economic growth on public expenditure using a VECM model as determined by the existence of cointegration between the variables. Pre-diagnostic checking and post-diagnostic checking was undertaken. Table 7 shows the lag length criteria/selection method used in testing the effect of fiscal policy stance and economic growth on public expenditure.

Table 7. Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1338.147	NA	2.59e+20	58.35420	58.51321	58.41377
1	-1117.845	392.7118	3.60e+16	49.47152	50.26658*	49.76935
2	-1093.203	39.64067*	2.52e+16*	49.09580*	50.52691	49.63190*
3	-1078.703	20.80462	2.80e+16	49.16101	51.22817	49.93538
4	-1065.798	16.27239	3.49e+16	49.29554	51.99875	50.30818

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
LR: Likelihood Ratio
LogL: Log Likelihood
FPE: Final Prediction Error
AIC: Akaike Information Criterion
SC: Schwartz Information Criterion
HQ: Hannan-Quinn Information Criterion
Source: Researcher's Computations

From the Table 7, two (2) lags were selected since under the LR, FPE, AIC and HQ the lag value was the lowest. After the lag selection was done, the effect of fiscal policy stance and economic

growth on public expenditure was undertaken using a VECM model. Before running the VECM model, diagnostic tests were done such as Johansen cointegration test and Stationarity test so as to ensure that the model would generate robust results. The data were tested for Stationarity at level and if it was not stationary then it was made stationary at first differencing or second differencing. For the cointegration tests, there was cointegration between fiscal policy stance, economic growth and public expenditure hence a VECM model being the most appropriate model to be used. The VECM model is as shown next;

Table 8. VECM Model for Fiscal Policy Stance, Economic Growth and Public Expenditure

D(PEXP) = C(1)*(PEXP(-1) + 17254.5019034*TAX(-1) - 0.555828617665*BDEFIC(-1) + 22833.7504095
*ECONG(-1) - 433109.506478) + C(2) *D(PEXP(-1)) + C(3)*D(PEXP(-2)) + C(4)*D(TAX(-1)) + C(5)
*D(TAX(-2)) + C(6)*D(BDEFIC(-1)) + C(7)*D(BDEFIC(-2)) + C(8) *D(ECONG(-1)) + C(9)*D(ECONG(-2))
+ C(10)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.264607	0.077014	3.435818	0.0015
C(2)	-0.670086	0.305600	-2.192692	0.0347
C(3)	-0.010339	0.295119	-0.035034	0.9722
C(4)	16279.59	38737.21	0.420257	0.6767
C(5)	-36613.46	27482.71	-1.332237	0.1909
C(6)	-0.194314	0.222949	-0.871559	0.3891
C(7)	0.188864	0.250937	0.752636	0.4564
C(8)	-3111.858	1504.511	-2.068352	0.0478
C(9)	-1480.582	1578.495	-0.937971	0.3543
C(10)	44391.28	9773.105	4.542188	0.0001

R-squared	0.743859	Mean dependent var	26379.71
Adjusted R-squared	0.681554	S.D. dependent var	50108.75
S.E. of regression	28276.87	Akaike info criterion	23.52378
Sum squared resid	2.96E+10	Schwarz criterion	23.91743
Log likelihood	-542.8088	Hannan-Quinn criter.	23.67191
F-statistic	11.93906	Durbin-Watson stat	1.914769
Prob(F-statistic)	0.000000		

Source: Researcher's Computations

From Table 8, the effect of fiscal policy stance and economic growth on public expenditure is statistically significant as indicated in the *p*-values while the R^2 is 74.39% meaning that 74.39% of the variations in public expenditure can be explained by fiscal policy stance and economic growth. The *p*-value of C(1) or the constant is 0.0015 meaning that there is a long run causality running from fiscal policy stance and economic growth to public expenditure. The value of Prob.

(f-statistic) is 0.000000 meaning that the model fits the data well. Short run causality was also tested using the Wald test as indicated in Tables 9, 10 and 11.

Table 9. Wald Test for the Effect of Tax on Public Expenditure

Test Statistic	Value	Df	Probability
F-statistic	1.029971	(2, 37)	0.3670
Chi-square	2.059942	2	0.3570

Null Hypothesis: C(4)=C(5)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(4)	16279.59	38737.21
C(5)	-36613.46	27482.71

Source: Researcher's Computations

As indicated in Table 9, there was no short-run causality running from tax to public expenditure as indicated by the *p*-value of 0.3570.

Table 10. Wald Test for the Effect of Budget Deficit on Public Expenditure

Test Statistic	Value	Df	Probability
F-statistic	0.781015	(2, 37)	0.4653
Chi-square	1.562029	2	0.4579

Null Hypothesis: C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(6)	-0.194314	0.222949
C(7)	0.188864	0.250937

Source: Researcher's Computations

As shown in Table 10, there was no short-run causality running from budget deficit to public expenditure as indicated by the *p*-value of 0.4579.

Table 11. Wald Test for the Effect of Economic Growth on Public Expenditure

Test Statistic	Value	Df	Probability
F-statistic	1.443792	(2, 37)	0.2490
Chi-square	2.887584	2	0.2360

Null Hypothesis: C(8)=C(9)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(8)	-3111.858	1832.043
C(9)	-1480.582	1578.495

Source: Researcher's Computations

As indicated in Table 11, there was no short-run causality running from economic growth to public expenditure as indicated by the *p*-value of 0.2360.

Table 12. Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.394928	Prob. F(2,35)	0.6767
Obs*R-squared	1.037256	Prob. Chi-Square(2)	0.5953

Source: Researcher's Computations

From the Table 12, we accept the null hypothesis that there is no serial correlation in the series residual as indicated by the *p*-value of 0.5953.

Table 13. Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.105546	Prob. F(12,34)	0.0440
Obs*R-squared	20.03707	Prob. Chi-Square(12)	0.0664
Scaled explained SS	31.94662	Prob. Chi-Square(12)	0.0014

Source: Researcher's Computations

As indicated in Table 13, we accept the null hypothesis that states that there is no heteroscedasticity as indicated by the *p*-value of 0.0664 at 5% level of significance while the

corresponding R^2 is 20.03707 which is the heteroscedasticity test statistic for the null hypothesis of no heteroscedasticity. The non-existence of heteroscedasticity, in essence, means that the variance of each error term is constant.

In the final step of testing intervening influence which involves regressing fiscal policy stance and economic growth on public expenditure using a VECM model as indicated in Table 8, the results indicate that the lagged variable of economic growth and public expenditure have a significant influence on public expenditure. Therefore, economic growth has a mediating/intervening influence on the relationship between fiscal policy stance and public expenditure.

The Table 13 shown next indicates a summary of the model coefficients before and after the intervening variable is introduced as also indicated in Table 5in the appendix and Table 8 respectively. Also, the percentage change as a result of the intervening variable which is economic growth is also indicated.

Table 14. Intervening Influence of Economic Growth on Fiscal Policy Stance and Public Expenditure

Variables		**Coefficients without intervening variable**	**Coefficients with intervening variable**	**% Change in the coefficients**
Fiscal Policy Stance	Tax(-1)	-0.0038	16279.59	100
	Tax(-2)	-0.1580	-36613.46	99.99
	Budget Deficit (-1)	-0.00000141	-0.1943	99.99
	Budget Deficit (-2)	0.0000000587	0.1889	99.99
Economic Growth	Economic Growth (-1)		-3111.86	
	Economic Growth (-2)		-1480.58	

Source: Researcher's Computations

As indicated in Table 14, there is a significant change in the model coefficients after the intervening variable (economic growth) is introduced in the relationship between fiscal policy stance and public expenditure. The percentage changes are approximately 100%. Therefore, economic growth has a mediating influence on the relationship between fiscal policy stance and public expenditure since there is a significant change in the variable coefficients and also in the final step of testing intervening influence the model results are statistically significant unlike the results in step one and step two.

Conclusion

The statistically insignificant effect of fiscal policy stance on economic growth implies that there could be a combination of other macroeconomic factors or policies that could explain the effect on economic growth apart from only fiscal policy stance. That is considering that economic

growth is one of the several macroeconomic factors that express the economic state of a country. Studies conducted by Temple (2003) and Glomm and Rioja (2006) contend that fiscal policy has an insignificant influence on the economic growth in the long term. These studies are in support of the classical study of Solow (1956) model of economic growth.

However, M'Amanja and Morrisey (2005) in testing the effect of fiscal policy on economic growth in Kenya found that productive government expenditure has a strong adverse effect on growth. On the other hand, this study found a weak effect of fiscal policy stance on economic growth. The divergence of research findings could be attributed to the differences in methodology whereby this study used VECM modelling as opposed to ARDL modelling and the regressing of only fiscal policy stance as a single independent variable against economic growth. In testing the effect of fiscal policy on economic growth, Perotti (2007) faults the study done by M'Amanja and Morrisey (2005) since it did not capture the structural shocks in the economy that is the impulses present when undertaking the analytical modelling.

Using the stepwise regression approach, the results indicated a full mediating or intervening influence of economic growth on the relationship between fiscal policy stance and public expenditure in Kenya. This means that the level of economic growth in a country would significantly influence the relationship between fiscal policy stance and public expenditure.

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