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Productive Government Expenditure and Economic Performance in sub-Saharan Africa: An Empirical Investigation

Hammed Adetola Adefeso *

Abstract: This study examined the effect of government expenditure on its disaggregated level on economic growth in a sample of 20 sub-Saharan African Countries over the period of 1980-2010 in a dynamic panel data model. The result from Generalised Method of Moments (GMM) revealed an inverse relationship between productive government expenditure and economic growth in sub-Sahara Africa. Also, productive government expenditures were not actually productive most especially when financed by non-distortonary government tax revenue in sub-Saharan African countries. The study concluded that the productive government expenditure and its corresponding source of the mode of financing were counterproductive for economic performance in the African countries.

Keywords: Productive government expenditure; economic performance; GMM; non-distortionary taxation.

JEL Classification: C01, H00

Introduction

The empirical evidences on how government expenditure influences economic performance have remained contentious as results and evidence differ by country and region, analytical method employed and measure of public sector activity. The explanation provided to account for this inclusiveness in the literature can be grouped into different categories. The first category lies on the handful of studies (Helm, 1985; Kneller et al. 1999; 2001) which emphasised the failure of numerous researchers to take into consideration the implication of complete (full specification) government budget constraint in their regressions. Theoretically, government expenditure is

* Hammed Adetola Adefeso is at Department of Local Government Studies, Faculty of Administration, Obafemi Awolowo University, Ile-Ife, Nigeria

classified into productive expenditure and unproductive expenditure which could be financed by different classifications of tax revenue. This lays emphasis on the need to consider both the sources and the uses of funds simultaneously for a meaningful evaluation of the effect of government expenditure or tax on growth otherwise the study is suffering from systematic biases to the parameter estimates associated with the implicit financing assumptions. Because of lack of a generally accepted theoretical framework that would pin down the most important determinants of growth whether government expenditure or not, the second category have emphasized the sensitivity of the findings to changes in the set of controls or conditioning variable used across studies (Levine-Renelt, 1992; Agell et. al. 1997), In addition, it is undoubted that there is dependence between government expenditure and the rate of growth (Wagner's Law) hence endogeneity problem as well as correlation of the government expenditure with the initial GDP (see Agell et al. 1997) which have not been sufficiently catered for.

In addition to this inconclusiveness of the growth effect of government expenditure, the existing studies have also displayed a disturbing trend as most of the literatures are either based on the developed countries or a large sample comprising of the mixture of the developed and developing countries. Despite the existence of a significant difference in the composition of government expenditure between developed and developing countries, not many studies have reported on the process by which government expenditure at its disaggregated level can shape the growth prospect of African countries. Specifically, out of thirty-six different empirical studies recognised by Kneller et al. (1998) as the main studies on fiscal policy variables and growth relationship, only three studies are from developing countries and no single study was reported based on panel data analysis from sub-Saharan Africa. Another justification for limiting the sample to sub-Saharan Africa is the wide spread perception that the region is structurally different from the rest of the world because they share key economic and cultural characteristic and thus provide homogeneity in the group of countries selected for the study. Infact, many policymakers from Africa believe that the lesson from Latin America or East Asia do not apply to them simply because they have different economic environment and this enable them to lean from one another. Therefore, an empirical analysis that focuses on the growth performance effect of disaggregated government expenditure within sub-Saharan African countries will have greater credibility among policymaker from Africa.

The primary objective of this study is to examine the growth effect of productive government expenditure for a panel of 20 sub-Saharan African countries paying attention to the sensitivity issue arising from initial condition and conditioning variables. Concerning the problem of potential endogeneity as a result of Wagner's Law, this study employs Generalised Methods of Moment (GMM) estimation method of analysis. The study also pays attention to the possible omitted variable bias we just mentioned by taking into consideration complete implication of government budget

constraint and the potential collinearity between the government expenditure and tax components. The rest of the paper is structures as follows: section 2 consists of predictions of endogenous growth models and literature review, section 3 comprises of methodology and the main findings from the study and summary & conclusion are drawn from section 4.

Prediction of Endogenous Growth Model

In the standard neoclassical growth models (like Judd, 1985; Chamley, 1986), the steady-state growth rate is undoubtedly determined by the exogenous growth of labour supply and technical progress. Hence, the models are unable to explain the growth effects of fiscal variables as the fiscal policy can only influence the transition path to the steady-state. However, the most recent endogenous growth models (like Barro, 1990; Barro and Sala-i-Martin, 1992; 1995, Mendoza et.al. 1997) attempt to transform the neoclassical temporary growth effects of fiscal policy into permanent growth effects by providing mechanisms through which fiscal policy affect the level of output and the steady-state growth rate.

Endogenous growth models classify fiscal policy variables into four categories: productive or unproductive government expenditure and distortionary or non-distortionary taxation. Government expenditures that allowed entering into private production function as a variable affects the marginal product of private capital and hence boost growth rate is considered as productive. If otherwise, then they are classified as unproductive government expenditure which do not influence growth rate. Distortionary taxation affects saving/investment decisions of the private agent by weaken the incentive to invest in physical/human capital and hence distorts the growth process of the steady-state but if otherwise, it is classified as non-distortionary taxation which does not affect growth rate because of the assumed nature of the private agents' utility function.

A simple model of endogenous growth such as Barro (1990) where the interaction between private and public capital is elegantly captured therefore, predict that the growth effect of non-distortionary tax and productive expenditure is positive while that of distortionary tax and unproductive expenditure is negative. An increase in productive government expenditure financed by non-distortionary taxation is predicted to have growth-enhancing effect but with the distortionary tax the growth effect is ambiguous. Similarly, an increase in non-productive expenditure financed by non-distortionary tax is predicted to have zero growth effect whereas growth effect is negative if distortionary tax is used.

The importance of the correct specification of the government budget constraint in analysis of the growth effect of the fiscal policy has been extensively discussed by

Kneller et al. (1999) for the developed economies. They noted that most researchers actually estimated eq.(1) which does not take into consideration implicit financing element:

$$g_{it} = \alpha + \sum_{i=1}^{k} \delta_i C_{it} + \sum_{j=1}^{n} \sigma_j F_{jt} + \mu_{it}. \quad (1)$$

This is possible because as rightly noted in the study of Tanzi and Zee (1997), numerous researchers have used any of the three indicators of fiscal policy (government expenditure, tax revenue, budget deficit/surplus) to measure the stance of fiscal policy. However, Levine-Renelt (1992) find that none of these fiscal indicators is robustly correlated with growth rate of the economy when evaluated individually and this accounts for the wide spread of the non-robustness of the studies on the growth effect of the fiscal policy variables across studies. Since in theory, if the budget constraint is completely specified i.e. expenditure equals revenue then $\sum_{j=1}^{n} F_{jt} = 0$.

$$g_{it} = \alpha + \sum_{i=1}^{k} \delta_i C_{it} + \sum_{j=1}^{n-1} \sigma_j F_{jt} + \sigma_n F_{nt} + \mu_{it} \quad (2)$$

Purposely to avoid the perfect collinearity in the fiscal instruments arising from the identity of the complete government budget constraint, Kneller et al. (1999) simply omits F_{nt} (the one with neutral effect on growth as suggested by theory, $\sigma_n = 0$) and concluded that the correct specification of the equation to be estimated on growth effect of fiscal policy is of the form:

$$g_{it} = \alpha + \sum_{i=1}^{k} \delta_i C_{it} + \sum_{j=1}^{n-1} (\sigma_j - \sigma_n) F_{jt} + \mu_{it} \quad (3)$$

Where g_{it} = growth rate of country i at time t, α = constant term, C_{it} = conditioning (non-fiscal) variables, δ_i = slope of the conditioning variables, F_{jt} = fiscal variables, σ_j = coefficient that measure the growth impact of the variable F_{jt}, one of $n - 1$ fiscal variables, σ_n = coefficient that measure the growth effect of the fiscal *nth* instrument which is use to fund change in one of the $n - 1$ fiscal policy variables. The hypothesis test of $\sigma_j = 0$ conducted in empirical studies is in actual fact testing the null hypothesis that $(\sigma_j - \sigma_n) = 0$ and not the former as implicitly assumed i.e. the studies actually estimate the impact of a change in one fiscal variable when there is an offsetting change in the omitted *nth* fiscal instrument, which implicitly finances the variation in the variable of interest. Therefore, the correct coefficient of fiscal structure is $\sigma_j - \sigma_n$ which captured the implicit financing element and it is interpreted as *the effect of a unit change in the relevant variable offset by a unit change in the omitted category.* Equation 3 is the estimable model for this study as explained by Kneller et al. (1999), Amanja and Morrissey (2005), Adefeso et al (2010) as cited in Ahmad and Wajid (2013)

A Review of Empirical Evidence on Fiscal Policy-Economic Growth Nexus

The empirical findings on fiscal policy-economic growth nexus is presented in table 1 to table 4 below. This study follows Kneller et al. (1999) by categorising the empirical findings into the following headings:

(i) Empirical evidences on Tax Revenue and Economic Growth
(ii) Empirical evidences on Government consumption expenditure and economic growth
(iii) Empirical evidences on Transfer payment or welfare expenditure and economic growth
(iv) Empirical evidences on Public investment expenditure and economic growth

Table 1: Empirical evidences on tax revenue and economic growth

Author	Countries	Years	Econometric Method	Length of Average	Main results
Marsden (1983)	10 pairs of Matched GDP	1970S	Pair Comparisons		Low tax countries grew quicker than tax countries
Koester, Kormendi (1989)	63	1970-1979	Cross-section	10-years	Marginal tax and average tax rates have no significant negative effect
Skinner (1987)	African countries		Cross-section		Income, corporation and import taxes are significant and negative. Export and sales taxes insignificant
Engen, Skinner (1992)	107	1970-1985	Cross-section	16years	Taxes have significant and negative effects in short and long-run.
Dowrick (1992)	OECD	1960-1985	Cross-section	26years	Income taxes significant negative Corporation taxes not significant.
Easterly, Rebelo (1993)	100	1970-1988	Cross-section	19years	Income taxes significant and negative. other type of taxation non-robust.
Cashin (1995)	23 OECD	1971-88	Panel	5-years	Total taxation significant negative
Mendoza, milesi ferreti, Asea (1996)	II OECD	1965-91	Panel	Annual, 5-year	Effective capital, consumption and labour tax rates are insignificant in 5-years averages non-robustly significant in annual data regressions.
Yi, Kocherlakota (1996)	US UK	US1891-1991-UK 1831-1991	Time-series	Annual (10 lags)	Tax measures insignificant individually, significant when put with public capital term.
Agell et al.(1997)	23 OECD	1970-1990		21years	Initially, the average share of tax revenues in GDP is negatively correlated with average annual growth rate but turned positive when initial GDP per capital and share of population younger than 15 and older than 65 were included as explanatory variables.
Poot (2000)		1983-1998		16years	The study found empirical support for the negative effect of taxes on growth
Adefeso et al. (2010)	Nigeria	1970-2005	Time-series	35years	Non-distortionary taxation and non-productive expenditures had neutral impact on economic growth.
Babalola and Aminu (2011)	Nigeria	1977-2009	Time-series	32years	Distortionary revenue and economic growth were positively related

Source: Kneller et al (1998) Modified

Table 2: Empirical evidences on government consumption expenditure and economic growth

Author	Countries	Years	Econometric Method	Length of Average	Main results
Landau (1983)	104	1961-76	Cross-section	16years	Government consumption expenditure has a significant negative effect.
Kormendi, Meguire (1985)	47		Cross-section	28years	Government consumption expenditure has a no significant effect.
Ram (1986)	115	1960-80	Cross-section Time series	10	Size of government produces significant positive coefficients
Landau (1986)	LDCs		Cross-section		Government consumption expenditure has a significant negative effect
Grier, Tullock (1989)	115	1950-81	Panel data	5-years	Government consumption expenditure has a significant negative effect
Romer (1989a)	94	1960-85	Cross-section	16 years	Government consumption expenditure has a significant positive effect
Romer (1989b)	112	1960-85	Cross-section	16years	Government consumption expenditure has a significant positive effect
Romer (1990)	90	1969-85	Cross-section	16 years	Government consumption expenditure has a significant positive effect
Alexander (1990)	13 OECD	1959-84	Panel	Annual	Government consumption expenditure has a significant negative effect
Barro (1991)	98	1960-85	Cross-section	16 years	Government consumption expenditure has a significant negative effect
Lin (1994)	62 countries	1960-1985	Panel	26years	Mixed results, government consumption expenditure not significant in developed countries but significantly positive in less developed countries.
Kneller et al. (1999)	22 OECD Countries	1970-1995	Panel	26years	Government consumption expenditure does not enhance growth
Dunne and Nikolaidou (1999)	Greece	1960-1996	Time series	37years	Government consumption expenditure does not affect growth
Tanninen (1999)	52 countries	1970-1992	Panel	23years	Government consumption expenditure has negative impact
Poot (2000)		1983-1998		16years	He did not find conclusive evidence for the relationship between government consumption and growth.
Gupta et al. (2005)	39 Lower income countries	1990-2002	Panel	13years	Countries where Spending is concentrated on wages tend to have lower growth.

Source: Kneller et al (1998) Modified

Table 3: Empirical evidences on transfer payment/welfare expenditure and economic growth

Author	Countries	Years	Econometric Method	Length of Average	Main results
Landau (1983)					Transfer payment expenditure has no significant effect.
Korpi (1985)	OECD	1970-87	Panel	18 years	Transfer payment expenditure has a significant negative effect
Landau (1985)	16 OECD	1952-76	Panel/ cross –section	Annual	Transfer payment expenditure has no significant effect.
Weede (1986)	19 OECD	1960-82	Panel/cross-section	7-years	Transfer payment expenditure has a significant positive effect
McCallum, Blais (1987)	17 OECD	1960-83	Panel/cross-section	7-years	Transfer payment expenditure has a significant negative effect
Castles,Dowrick (1990)	18 OECD	1960-85	Panel	6 years	Transfer payment expenditure has a significant negative effect
Weede (1991)	19 OECD	1960-85	Panel	7-years	Transfer payment expenditure has a significant positive effect
Nordstrum (1992)	14 OECD	1970-89	Cross-section	20 years	Transfer payment expenditure has a significant positive effect
Sala-i-Marin (1992)	75		Cross-section		Transfer payment expenditure has a significant positive effect
Person, Tabellini (1994)	14 OECD	1960-85	Cross-section	16 years	Transfer payment expenditure has a significant positive effect
Hanson, Henrekson(1994)	14 industries for OECD	1970-1987	Cross- section	18 years	Transfer payment expenditure has no significant effect.
Cashin (1995)	23OECD	1971-1988	Panel	5-years	Transfer payment expenditure has a significant positive effect
Nazmi, Ramirez (1997)	Mexico	1950-1990	Time-series	Annual	Transfer payment expenditure has a significant positive effect

Source: Kneller et al (1998) Modified

Table 4: Public investment expenditure and growth studies

Author	Countries	Years	Econometric Method	Length of Average	Main results
Landau(1986)	LDCs				Education, defence, capital Expenditure insignificant.
Barth,Bradley (1988)	16 OECD	1971-83	Cross-section	13years	Total public investment Insignificant.
Barro (1989)	72	1960-85	Cross-section	16 years	Total investment significant
Barro (1991)	98	1960-85	Cross-section	16 years	Transport and communication significant.total public investment insignificant.
Easterly, rebelo (1993)	100	1970-88	Cross-section	19 years	Transport and communication significant. Total investment education,health insignificant.
Devarajan et al. (1993)	14 OECD	1970-1988	Panel	19years	Government expenditure on health and transport and communications are growth promoting but found no positive impact of education and military spending.
Hansson, Henrekson (1994)					Education spending is positive
Devarajan, Swaroop, Zou (1996)	14 developed countries	1970-1990	Panel	5-years moving Average	Health transport and communication significant positive, defence, education significant negative.
Devarajan et al. (1996)	43 Developing countries	1970-1990		21years	Capital expenditures have significant and negative impact on economic growth whereas current (unproductive) expenditures have positive and significant influence on economic growth. The negative impact of capital expenditures is due to excessive government expenditures towards productive expenditures at the expense of non-productive expenditure
Yi, Kocherlakotas (1996)	US UK	US 1891-1991 UK 1831-1991	Time-series	Annual (10 lags)	Public investment insignificant when included individually. significant when included with tax variables
Kneller et al.(1999)	22 OECD Countries	1970-95	Panel	26years	Government investment enhances growth
Dunne and Nikolaidou (1999)	Greece	1960-96	Time series	37years	Military/defence expenditure have a negative effect on growth
Tanninen (1999)	52 countries	1970-92	Panel	23years	Large government spending on public goods is growth retarding but not for small government spending, social security spending is positive
Poot (2000)		1983-98		16years	There is positive link between growth and education spending while the evidence on the negative growth impact of defense spending is moderately strong, also non-robust positive associations exist between infrastructure spending and economic growth.
Albala and Mamatzakis (2001)	Chile	1960-95	Time series	36years	Positive and significant correlation between public infrastructure and economic growth.

Bleaney et al. (2001)		1970-95	Panel	5years averaging	Results completely support Barro's prediction. Education and health
Milbourne, Otto and Voss (2003)	74 industrial and developing countries				Positive correlation between investment and growth
Yasin (2003)	Sub-Saharan Africa		Panel		Government spendings on capital formation have positive and significant effect on growth.
Derin (2003)	33 developing countries, 15 European Union countries	1970-99	Panel	20years, 5years averaging data	Investment and per capital GDP are positively and significantly related. Distortionary taxation has negative and significant impact in EU countries while it has insignificant relation in case of developing countries. Distortionary tax does not enhance long run growth in developing economies. Productive expenditures have negative and significant impact in developing countries while it has insignificant relation in case of EU countries. Endogenous growth model holds for only developing countries. The impact of labour force growth, non-distortionary taxation and non-productive expenditures on long run per capital GDP is insignificant for both the developed and developing countries.
Benos (2004)	16 OECD countries	1990-97	Panel	8years	Inverted U-shaped relation of health, education and fuel energy expenditures with economic growth. Education has a strong positive relation to economic growth for poor countries and health expenditures have an inverse relation to it. There exist a U-Shaped relationship of housing, transport, communication, social security expenditures with economic growth.
Gupta et al. (2005)	39 Lower income countries	1990-02	Panel	13years	If the structure of the government expenditures consists of more productive than non-productive expenditure then it has positive impact on economic growth. Those countries that allocate higher shares to capital and nonwage goods and services enjoy faster output expansion.
Amanja and Morrissey (2005)	Kenya	1964-04	Time-series	40years	The results were contrary to the public policy endogenous growth model that distortionary taxation promotes economic growth and productive expenditures stifle it. Non-productive and non-distortionary taxation had neutral impact on economic growth which is consistent with Barro's prediction.
Kukk (2007)			Cross- section		Productive and non-productive expenditures had positive and negative impact on economic growth respectively
Adefeso et al.(2010)	Nigeria	1970-05	Time-series	35years	Productive expenditures had positive impact on economic growth.
Babalola and Aminu (2011)	Nigeria	1977-09	Time-series	32years	Productive expenditures and economic growth were positively and significantly associated in the long run but positive and insignificant in the short run

Source: Kneller et al (1998) Modified

Data Description, Theoretical Classification of Fiscal Variables and Research Methodology

Data Description, Theoretical Classification of Fiscal Variables

Barro (1990) classifies the government expenditures based on their impact on economic growth as productive government expenditures which have a positive impact on economic growth, unproductive government expenditures which are neutral or have an insignificant impact on economic growth, and other public expenditures which have an insignificant impact on economic growth. Similarly, government tax revenues have been classified as distortionary taxation which its economic growth effect is negative, non-distortionary which its economic growth effect neutral or insignificant and others tax revenues which have insignificant effect. These classifications are summarized in the study of Kneller et al (1998), Benos (2004) among others and the vector C_{it} consists of a set of variables identified by Levine and Renelt (1992) as the important control variables for cross-country growth regressions such as average real investment share of GDP proxied by capital formation/ investment in physical capital, human capital proxied by secondary school enrolment rate and average growth rate of the population which were all sourced from World Development Indicator (WDI).

Econometric Models and Analysis of Results

The study departs a little from the line of the prediction of the public policy endogenous growth models as employed by Kneller et al. (1999; 2001) who follow Barro (1990), complete specification of government budget constraints are unable to be taken into consideration in full because of limitation of data availability most especially at their disaggregated level in Africa. This study only takes into consideration both productive government expenditure and non distortionary government tax revenue. The study recognised the submission of Tanzi and Zee (1997) that are three indicators of fiscal policy and these are government expenditures, taxes and deficit. Many researchers have used government expenditure to measure the stance of fiscal policy like Barro (1999), Barro and Sala-i-martin (1995), Ambler and Paquet (1996) among others. Other authors have used tax rates see for example, Engen and Skinner (1996), Stokely and Rebelo (1995), Xu (1994) or deficit measures like the study of Easterly and Rebelo (1993). Levine and Renelt (1992) found that none of these fiscal indicators is robustly correlated with economic growth when evaluated individually. Both the source of the revenues and expenses must be taken into consideration for meaningful evaluation on any Fiscal Policy variable-Economic Growth nexus. This has led to the formulation of 3 variant models of equation 3. This study imposed zero restriction

on budget deficit which is presented in the model I and omits government revenue in the model II while in model III, government expenditure is omitted. In Model I however, in order to avoid perfect multicollinearity only budget deficit was omitted in the model. Theoretically, model I yields more precise and accurate measures of fiscal policy variables with lower standard errors because both the source of the revenue and expenditure are taken into consideration. Theoretical aggregation of functional classification of disaggregated fiscal policy variables is well documented in the studies of Benos (2004); Kneller (1999) among others.

In other to control the endogeneity problem raised in section one of this study, instrumental variable (IV) methods are employed in the empirical estimations. This IV methods employed will solve the simultaneity bias between regressors and regressand and the error measurement. The application of the Generalised Method of Moments (GMM) technique has been recognised as an extension of IV method of estimation which uses predetermined values of the right-hand side variables as instruments. The empirical findings of Knerller et al. (1999) and Brons et al. (2000) recommend GMM estimation on which is equally supported by the theory.

Econometric Models

In line with the theoretical background of this study, the dynamic behaviour of the economic relationships being studied is achieved by estimating a dynamic panel regression model specified as follows:

$$g_{it} = \sigma g_{it-1} + \beta X'_{it} + \mu_i + v_{it} \quad (4)$$

Where g_{it} represents the regressand for individual country, i, over period t; X_{it} is the exogenous regressors, country specific effects is μ_i while v_{it} is the remainder disturbance term. The theoretical application of GMM is justified by the introduction of lagged value of regressand as part of regressors which has led to the problem of autocorrelation. However, to overcome this econometric problem in the dynamic model, a number of empirical studies have suggested Arellano and Bond (1991) GMM estimator and Blundell and Bond (1998) system GMM estimator. The former differences the model in equation 4 purposely to get rid of the effects along with any time-invariant regressor as specified below:

$$g_{it} - g_{it-1} = \sigma(g_{it-1} - g_{it-2}) + \beta(X'_{it} - X'_{it-1}) + (v_{it} - v_{it-1}) \quad (5)$$

And it is assumed that $v_{it} - v_{it-1}$ follow first order moving average process (MA(1)). A problem with this estimator is that lagged levels are poor instruments for first differences if the variables are close to a random walk and hence system GMM es-

timator. In addition to lagged levels of variables as instruments for equations in first differences, additional instruments can be brought to bear to increase efficiency.

$$g_{it} = \sigma z'_{it} + \beta X'_{it} + \mu_i + v_{it} \; ; \; i = 1,\ldots\ldots, n; \; t = 1,\ldots\ldots,T. \qquad (6)$$

Where z'_{it} is a vector of predetermined and endogenous covariates which may include the lag of g_{it} all of which may be correlated with the μ_{it}.

Conclusion and Policy Recommendation

This study considered the estimate three variants of the growth regression equation 3 using dynamic panel-data techniques of analysis. The results of these equations are presented in the respective tables as shown in the appendix. In the tables, the GDPK is the Gross Domestic Product per Capital; PGE is the Productive Government Expenditure, BD is the Budget Deficit, LAB is the human capital proxied by secondary school enrolment rate and GKF is the Gross Capital Formation. The empirical evidence provided in this study suggests that in sub-Saharan African countries, the productive government expenditure is not actually productive in relation with the economic growth over the period of 1980-2010 as shown by both Difference GMM and System GMM as shown in Table 5.

Contrary to the expectation but consistent with the relevant previous findings in the literature on the African economy, the results revealed negative effect of productive government expenditure on economic growth, as one percent increase in government expenditure leads to a significant magnitude decrease in economic growth in sub-Saharan Africa as shown in the dynamic panel data framework in Table 5 which takes into consideration both the source of the revenue and mode of expense. Also, contrary to the prediction of endogenous growth model, most of the productive government expenditures financed by non-distortionary taxation are counterproductive as revealed in Table 6 as the omission of government tax revenue does not statistically mitigate the negative effect of productive government expenditure on economic growth in sub-Saharan Africa. It is also revealed that the budget deficit is also negatively correlated with economic growth as shown in the Table 6 and Table 7. This is also in line with previous studies conducted within the African continent. This may be linked with the effect endemic corruption which is rampant among African politician. This study therefore, recommended that there must be good governance and necessary fiscal stimulus and discipline before African countries could realise and improve their economic development experience.

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APPENDIX

Table 5: Estimated result of all fiscal policy aggregated variables except budget deficit

	Diff GMM one step ***(1)***	***Diff GMM two step*** ***(2)***	***System GMM one step*** ***(3)***	***System GMM two step*** ***(4)***
Dependent variable: ***Log (GDPk$_{it}$)***				
Log (GDPK$_{it-t}$)	*1.59*** [3.64] (0.00)*	*1.32 [4.68] (0.977)*	*1.68*** [1.67] (0.00)*	*-8.39 [5.16] (0.87)*
Log (PGE$_{it}$)	*-3.47*** [3.76] (0.00)*	*-3.23 [1.06] (0.976)*	*-5.28*** [2.30] (0.00)*	*-3.32*** [1.67] (0.04)*
Log (NGR$_{it}$)	*2.40*** [1.69] (0.00)*	*-3.02 [7.38] (0.967)*	*5.58*** [1.13] (0.00)*	*3.48*** [1.69] (0.04)*
Log (Bd$_{it}$)	----------	----------	----------	----------
Log (Lab$_{it}$)	*6.06*** [1.34] (0.00)*	*-5.52 [2.54] (0.983)*	*9.39*** [7.66] (0.00)*	*9.74 [2.87] (0.00)*
Log(GKF$_{it}$)	*2.19*** [3.69] (0.00)*	*3.73 [1.11] (0.973)*	*-4.15** [2.30] (0.07)*	*1.71 [1.67] (0.918)*
Instrument	*342*	*342*	*148*	*148*
No of Observation	*426*	*426*	*442*	*442*

Note:***,** denote significant at 1% and 5% respectively, [] denotes standard error, () is prob. of z value

Table 6: Estimated result of fiscal policy aggregated variables except govt revenue

	Diff GMM one step	***Diff GMM two step***	***System GMM one step***	***System GMM two step***
	(1)	***(2)***	***(3)***	***(4)***
Dependent variable: ***Log ($GDPk_{it}$)***				
Log ($GDPK_{it-i}$)	*-1.85****	*1.90*	*1.20****	*-3.10****
	[1.59]	*[5.35]*	*[3.06]*	*[4.29]*
	(0.00)	*(0.997)*	*(0.00)*	*(0.00)*
Log (PGE_{it})	*-2.18****	*1.69*	*-4.08****	*-7.69****
	[1.06]	*[6.09]*	*[2.74]*	*[1.44]*
	(0.039)	*(0.998)*	*(0.00)*	*(0.00)*
Log (NGR_{it})	----------	----------	----------	----------
Log (Bd_{it})	*-1.48*	*-1.36*	*-7.73****	*-6.30*
	[7.38]	*[1.59]*	*[2.07]*	*[2.16]*
	(0.841)	*(0.999)*	*(0.00)*	*(0.00)*
Log (Lab_{it})	*5.11***	*-1.17*	*-4.44****	*-2.60****
	[2.63]	*[9.77]*	*[1.41]*	*[1.61]*
	(0.052)	*(0.999)*	*(0.00)*	*(0.00)*
Log(GKF_{it})	*5.52*	*-9.86*	*3.25*	*-2.37***
	[7.25]	*[8.54]*	*[4.22]*	*[1.32]*
	(0.446)	*(0.999)*	*(0.444)*	*(0.072)*
Observation	*426*	*426*	*442*	*442*
Instrument	*342*	*342*	*148*	*148*

Note:***,** denote significant at 1% and 5% respectively, [] denotes standard error, () is prob. of z value

Table 7: Estimated result of fiscal policy aggregated variables except govt expenditure

	Diff GMM one step ***(1)***	***Diff GMM two step*** ***(2)***	***System GMM one step*** ***(3)***	***System GMM two step*** ***(4)***
Dependent variable: ***Log ($GDPk_{it}$)***				
Log ($GDPK_{it-i}$)	*1.08**** *[7.11]* *(0.00)*	*-1.35* *[3.04]* *(0.96)*	*6.74**** *[3.08]* *(0.00)*	*6.60**** *[1.97]* *(0.00)*
Log (PGE_{it})	---	---	---	---
Log (NGR_{it})	*-3.13* *[4.74]* *(0.509)*	*2.16* *[9.70]* *(0.98)*	*-2.38**** *[2.75]* *(0.00)*	*3.55* *[6.91]* *(0.67)*
Log (Bd_{it})	*-1.48* *[7.38]* *(0.84)*	*1.54* *[8.10]* *(0.985)*	*-5.92**** *[4.24]* *(0.00)*	*-2.33* *[1.73]* *(0.178)*
Log (Lab_{it})	*5.11* *[2.63]* *(0.841)*	*-2.42* *[5.32]* *(0.996)*	*7.23**** *[1.41]* *(0.00)*	*2.91* *[3.55]* *(0.412)*
Log(GKF_{it})	*5.52* *[7.25]* *(0.446)*	*-1.54* *[6.45]* *(0.998)*	*3.10* *[4.24]* *(0.464)*	*-2.30* *[1.55]* *(0.882)*
Observation	*426*	*426*	*442*	*442*
Instrument	*342*	*342*	*148*	*148*

Note:***,** denote significant at 1% and 5% respectively, [] denotes standard error, () is prob. of z value