



## PUBLIC EXPENDITURE AND ECONOMIC GROWTH IN WEST AFRICAN COUNTRIES: AN EMPIRICAL EXAMINATION

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### ABSTRACT

This paper examined the effect of government expenditure on the economic growth of fifteen (15) West African countries. The paper employed the ordinary least squares (OLS) approach of estimation in examining the effect of government expenditure on the economic growth of each of the 15 countries. However, the fixed effects least squares dummy variable (LSDV) panel regression approach was used in determining the effect of government expenditure on the economic growth of West Africa in general. In examining the nature of the relationship between government expenditure and economic growth in the sub-region, the Granger Causality Staked test was utilized. Findings of the study revealed that government expenditure exerts a positive and significant effect on the economic growth of all the 15 West African countries. Also, the Panel regression result indicates that government expenditure positively and significantly affects economic growth. However, the magnitude of the significance varies from country to country as reported by the Wald test. The Stacked test indicated that a one-way causality runs from government expenditure to economic growth. The paper recommended that governments of West African countries should increase its spending on components of public expenditure which will in turn promote investment in the private sector. This, as captured in the Ram's model, will propel growth in diverse sectors of the economy.

**Keywords:** Government Expenditure, Economic Growth, Panel Regression, OLS, LSDV

### INTRODUCTION

The laissez faire doctrine of the classical economist presumes less government intervention in the economy with the reason of inefficiency inherent in the government sector. Further, they believed that excessive government expenditure, especially when financed by taxation and government borrowing distort economic activities because increased taxation in an attempt to finance government expenditure reduces consumer income and aggregate demand, as such the overall performance of the economy dwindles (Udoka and Anyingang, 2015). There have been developments over the years which made economists to see the need of government in economic management. Such can be traced to the Great Depression of the 1930s which gave birth to Keynesian economics. The Keynesians are of the view that "an increase in government expenditure will affect the aggregate demand and supply, which then leads to an increase in the national income" (Lee, Won, and Jei, 2019). Therefore, the Keynesians proposed that government expenditure is a genuine tool for the enhancement of economic activities hence growth (Udoka and Anyingang, 2015). The Wagner's law has also been put forward to ascertain the causality between output and government expenditure. Based on this law, increase in national output stimulate government expenditure.

Empirical studies on the effect of government expenditure on economic growth has revealed conflicting results over the years. Some scholars reported a positive effect (see Robinson,

1977; Ram, 1986; Yasin, 2011; Onifade, 2015; and Gukat, 2015), while others have reported a negative effect (see Landau, 1983; Basil, 2000; Afonso and Tovar, 2011; and King and Rebelo, 1990). One of the reason that have been put forward for the observed negative effect is the presence of structural rigidities (Udoka and Anyingang, 2015). West African sub-region is categorized as a region covered by developing countries hence, the role of government expenditure in this sub-region need not to be overemphasized. This is in line with the presumption of the Structuralist Hypothesis that the government plays a critical role in providing development financing at the early stage of economic development. Government of West African countries have been spending significantly over the years but the region is still wallowing in poverty, unemployment, inequality, and other key indices of development. Growth is still lagging behind and this raises key questions on the efficacy of government expenditure in promoting economic growth in the region. Such key questions are:

- i. Is there any relationship between government expenditure and economic growth in West Africa?
- ii. What is the effect of government expenditure on economic growth of West African countries?
- iii. Does government expenditure affect economic growth in West Africa in general?

Based on the above research questions, this paper seeks to broadly examine the effect of government expenditure on the economic growth of West Africa. The specific objectives are:

- i. To examine the direction of causality between government expenditure and economic growth in West Africa.
- ii. To investigate the effect of government expenditure on economic growth of each of the West African countries.
- iii. To examine the effect of government expenditure on economic growth of West Africa in general.

The need for sustainable economic growth is of great importance to survival of a nation. This is because no country will be pleased to be left out in the development process. The findings of this study will provide the insight to the Government and policy makers in West African countries and economic and political organisations within the sub-region, on the rationale for appropriate appropriation of public funds to foster growth in the region. This study is strictly an attempt to investigate the effect of government expenditure on economic growth of West Africa for the period 1990 to 2018. There have been observed issues on data collection, especially on Cape Verde and Liberia. In these two countries, the data point could not be obtained right from 1990 but only from the 2000s. The paper is structured in five sections. Section 1 is the introduction while section 2 is the literature review. Following section 2 is section 3 which captures the methodology of the research, while section 4 showcases the empirical findings. Lastly, section 5 presents the conclusion and recommendations.



## LITERATURE REVIEW

### Theoretical Framework

The theoretical underpinning of this study is based on the work of Ram (1986), where the economy is divided into two broad sectors - government sector (G) and non-government sector (N). The production function of the two broad sectors are expressed as:

$$N = N(L_N, K_N, G) \quad (1)$$

$$G = G(L_G, K_G) \quad (2)$$

It follows from equation 1 and 2 that output in the two sectors is a function of labour (L) and capital (K). Also, output of the government sector (G) exerts a spill over effect on the output of non-government sector (N). This is captured by the G component of equation 1. The total factor inputs are given by:

$$L_N + L_G = L \quad (3)$$

$$K_N + K_G = K \quad (4)$$

The total output in the economy is given as the output of the non-government sector plus that of the government sector, which is expressed as:

$$Y = N + G \quad (5)$$

Given an assumption of different relative factor productivity, we then have:

$$\frac{G_L}{N_L} = \frac{G_K}{N_K} = 1 + \delta \quad (6)$$

Where  $G_L$ , which is the first partial derivative of government sector output with respect to Labour, is the marginal productivity of labour in the government sector,  $N_L$ , which is the first partial derivative of non-government output with respect to labour, is the marginal productivity of labour in the non-government sector. Similarly,  $G_K$  and  $N_K$  are the marginal productivity of capital in the government sector and non-government sectors respectively. Ram (1986) noted that  $\delta$  indicates the sector that has higher marginal factor productivity, with a positive  $\delta$  implying higher input productivity in the government sector and a negative  $\delta$  being an indication of a lower input productivity.

A total differentiation and manipulation of the production function and employing equation 3, 4, and 6, we can conclude that:

$$dY = N_L dL + N_K dK + N_G dG + \frac{\delta}{1+\delta} dG \quad (7)$$

Dividing equation 7 by Y yields

$$\dot{Y} = \alpha \left(\frac{\dot{L}}{L}\right) + \beta \dot{L} + \left[ \left\{ \frac{\delta}{(1+\delta)} - \theta \right\} \dot{G} \left(\frac{G}{Y}\right) \right] + \theta \dot{G} \quad (8)$$

Where  $\alpha$  is investment which is assumed to equal  $dK$ ,  $\alpha$  is the marginal product of K in the N sector,  $\beta$  is the elasticity of non-government output N with respect to L and  $\theta$  equals  $N_G \left(\frac{G}{Y}\right)$ .

The implication of equation (8) is that economic growth ( $\dot{Y}$ ) is affected by investment rate ( $\frac{\dot{L}}{L}$ ), labour force growth ( $\dot{L}$ ), government expenditure growth ( $\dot{G}$ ), and government size ( $\frac{G}{Y}$ ).

### Empirical Literature

Series of empirical works have been conducted to ascertain the efficacy of government expenditure on economic growth. These studies vary from country to cross-country analysis. Robinson (1977) conducted his study on dependency, government revenue and

economic growth for the period 1955 – 1970 using cross country sample. The study concluded that a larger government size promotes economic growth by reducing the “dependence” especially in the poorer, less developed contexts. Also, Landau (1983) carried out a cross-sectional study of over 100 countries in the period 1961-1976 on government expenditure and economic growth. The study revealed a negative relationship between the growth rate of real per capita GDP and the share of government consumption expenditure in GDP. Kormendi and Meguire (1985) conducted a study on macroeconomic determinants of growth based on post-war data from 47 countries. Findings of the study revealed no significant cross-sectional relationship between the growth rate of real GDP and the growth rate or the level of the share of government consumption spending.

The study of Ram (1986) on “Government Size and Economic Growth” was based on information of 115 countries from 1960 through 1980. The result showed that the overall impact of government size on growth is positive in almost all cases. Basil (2000) used Greek data for the period from 1948 to 1994 to examine public sector and economic growth. Their findings revealed the existence of a negative relationship between government size and economic growth. Similar result was obtained by Afonso and Tovar (2011) in a panel study of 108 countries from 1970 – 2008. Kolluri *et al.* (2000) used the error correction model for G7 countries from 1960 to 1993 and confirmed the existence of a long-term equilibrium between economic growth and government expenditure. Findings of the study is also a validation of Wagner’s law. Yasin (2011) using panel data estimation techniques obtained a significant positive impact of government expenditures on the economic growth of some group of Sub-Saharan African countries. Similar to this was the work of Nwaka and Onifade (2015) who also obtained a positive nexus between the size of the government and economic growth in some African countries. In the same vein, Ono (2014) utilized the autoregressive distribution lag approach to confirm the threshold co-integration relationship between Japanese government spending and economic growth. The study revealed that as an economy grows, the share of public expenditure in the GDP tends to increase. It also appears that the long-term equilibrium is asymmetrical, implying that Wagner’s law is valid.

Gukat (2015) analysed the relationship between government expenditure on human capital and economic growth in Nigeria. The error correction mechanism employed in the study revealed that public expenditure on human capital has a positive and significant impact on economic growth in Nigeria. Similarly, Emori, Duke, and Nneji (2015) investigated the impact of government expenditure on the Nigerian economy using ADF unit root test and OLS regression analysis. The study revealed that public expenditure had a significant effect on the Nigerian economy. Sáez, Álvarez-García, and Rodríguez (2017) provided a new evidence of the impact of government spending on economic growth in the European Union countries for the period 1994 – 2012. The study employed a panel regression analysis and the result revealed that government expenditure affected economic growth negatively. Also, mixed result was recorded on country basis. Recently, Lee, Won, and Jei (2019) carried out a study on the relationship between government expenditure and economic growth for China and Korea using quintile regression model. In Korea, culture, social security and



environment expenditure are generally positive in relation to economic growth, while economic ( $\tau=0.2\sim 0.6$ ), education ( $\tau=0.7\sim 0.9$ ), general public service ( $\tau=0.1\sim 0.2, 0.6$ ), health expenditure ( $\tau=0.1\sim 0.3$ ) have a negative effect on economic growth. China has a small coefficient, but its education, general public service and social security expenditure has a negative relationship. While statistically significant compared to Korea, China has relatively uniform effects on economic growth when fiscal spending increases.

### Summary of Literature Reviewed

From the empirical literature reviewed, there have been mixed findings on the effect of government expenditure on economic growth. Some studies revealed a negative effect (Landau, 1983; Basil, 2000; Afonso and Tovar, 2011), while others reported a positive effect (Ram, 1986; Yasin, 2011; Nwaka and Onifade, 2015, Gukat, 2015; and Lee, Won, and Jei, 2019). This mixed findings is an indication that the effect of government expenditure on economic growth is inconclusive. This study therefore focuses on examining the effect of government expenditure on economic growth in the West African region using data that covers the period 1990 to 2018. The study adopts the panel regression analysis of fixed effect least squares dummy variable (LSDV) approach in the cross-country analysis while the OLS approach was employed on country basis.

## METHODOLOGY

### Basic Study Design

This study adopts an econometric approach of secondary research employing data from secondary sources. The data were analysed using simple OLS regression and panel data regression approach. The statistical software employed is the Eviews 10 software package.

### Model Specification

Given the theoretical framework of Ram (1986), a simple approximation of the growth equation is given as:

$$Y = f(G) \quad (9)$$

Which in its estimable form transforms to:

$$Y_{ij} = \beta_0 + \beta_1 TGEX_{ij} + \mu \quad (10)$$

Where:  $Y_{ij}$  = Real gross domestic product of country  $i$  at time  $j$ ,  $TGEX_{ij}$  is government expenditure of country  $i$  at time  $j$ ,  $\beta_0$  is the constant of the regression,  $\beta_1$  is the slope coefficient which is expected to be positive, and  $\mu$  is the random error term.

In examining the direction of causality between government expenditure and economic growth in West Africa, the following equations for the causality test is specified.

$$Y_{ij} = \sum_{i=1}^n \pi_i TGEX_{t-i} + \sum_{j=1}^n \beta_j Y_{t-j} + \mu_{it} \quad (11a)$$

$$TGEX_{ij} = \sum_{i=1}^n \Omega_i Y_{t-i} + \sum_{j=1}^n \xi_j TGEX_{t-j} + \mu_{it} \quad (11b)$$

A unidirectional causality emerges if  $Y$  granger causes  $TGEX$  or  $TGEX$  granger causes  $Y$ , while a bidirectional causality occurs when the two variables granger causes each other at the same time. However, there is a situation in which none of the variables granger cause each other.

### **Sources of Data**

Data for this study were obtained from the world development indicators. The data covers the period 1990 to 2018 with 15 countries being evaluated. The countries include Benin Republic, Burkina Faso, Cape Verde, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. Exceptions to the time frame is Cape Verde, which covers the period 2007 to 2018, and Liberia which covers the period 2000 to 2018, due to data limitations.

### **Analytical Technique**

The ordinary least squares (OLS) method of estimation was employed in examining the effect of government expenditure on the economic growth of the different fifteen countries of West Africa. Also, both the fixed effect approach of panel regression was used to examine the effect of government expenditure on economic growth of West African economies in general. The direction of causality between government expenditure and economic growth in West Africa was conducted using the Panel Granger Causality Test (Staked test).

## **EMPIRICAL FINDINGS**

### **Stylized Facts of Economic Growth in West African Countries**

A clear look at Figure 1 reveals key stylized fact on the nature of GDP of the 15 West African countries under study. One of such is that Nigeria and Guinea are observed to have the greatest GDP over all other countries with the value reaching 70 billion as at 2018.

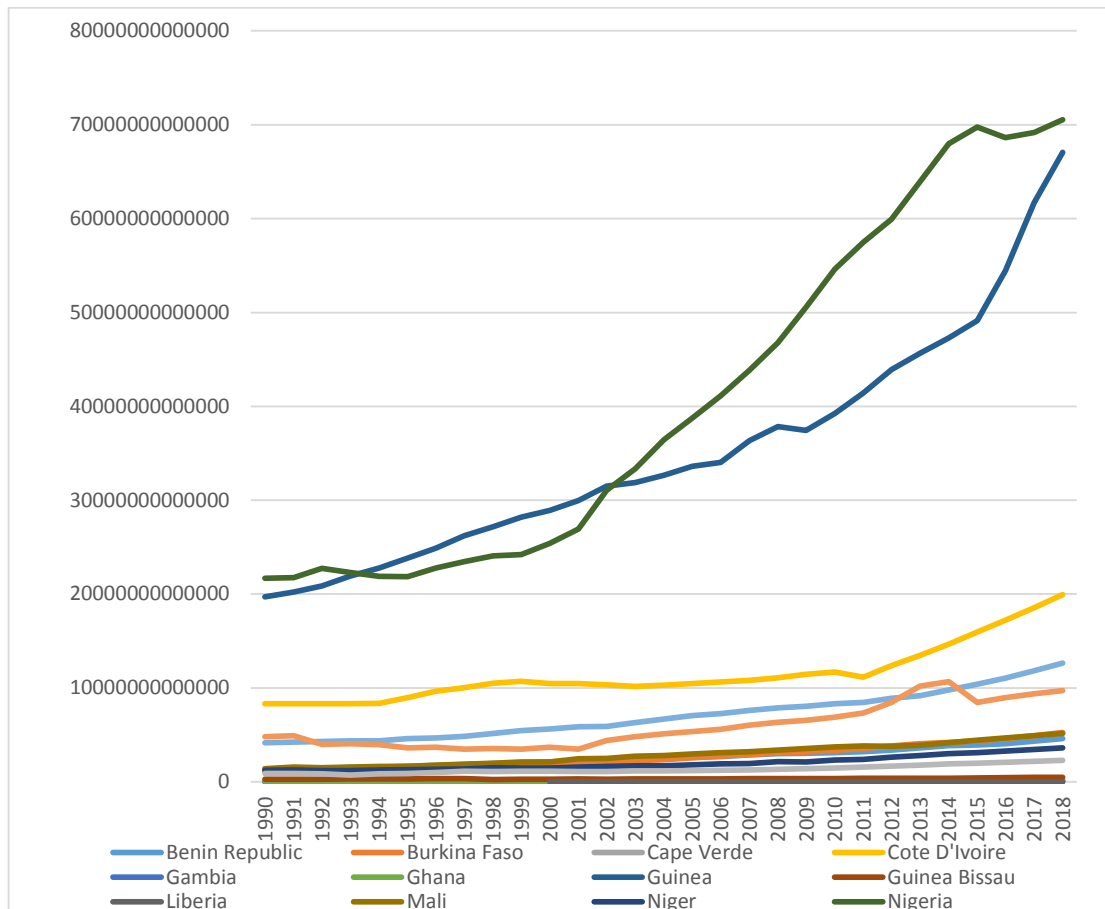


Figure 1: GDP of West African Countries

Other countries' GDP are also observed to be on the range of ten billion to twenty billion. In terms of ranking, Nigeria could be placed first followed by Guinea, and then Cote D'Ivoire.

### Granger Causality Test

The result of the Granger Causality test is presented in Table 4.1.

Table 4.1: Granger Causality Test Result (Staked Test)

S/N	Null Hypothesis:	Observation	F-Statistic	Probability
1.	Government Expenditure does not Granger Cause Economic Growth	378	19.4054	0.0000
2.	Economic Growth does not Granger Cause Government Expenditure		1.78310	0.1695

Source: Researchers' Computation using Eviews 10.

The first null hypothesis that government expenditure does not Granger Cause economic growth is rejected at 1% level of significance. This is because the F-statistic (19.4054) is statistically significant as reported by the p-value of 0.0000. We therefore conclude that government expenditure causes economic growth in West Africa. The causality is unidirectional since it is also observed that the causality does not flow from economic growth to government expenditure as indicated by the insignificant F-statistic in the second null hypothesis.

### Country Regression Estimates

The effect of government expenditure on economic growth of each of the West African countries is presented in table 4.1 below.

**Table 4.2: Estimated linear relationships between economic growth and government spending in West African Countries (1990-2018). Dependent variable: Economic Growth**

S/N	Country	Coefficient	Standard Error	t-statistic	Probability	R-squared
1.	Benin	5.168	0.202	25.557	0.0000	0.960
2.	Burkina Faso	3.956	0.184	21.534	0.0000	0.945
3.	Cape Verde	4.710	1.544	3.015	0.0122	0.482
4.	Cote D'Ivoire	3.971	0.129	30.803	0.0000	0.972
5.	Gambia	3.873	0.431	8.990	0.0000	0.750
6.	Ghana	4.850	0.326	14.897	0.0000	0.892
7.	Guinea	2.058	0.141	14.590	0.0000	0.887
8.	Guinea Bissau	1.996	0.361	5.521	0.0000	0.530
9.	Liberia	3.194	0.233	13.688	0.0000	0.917
10.	Mali	5.975	0.247	24.176	0.0000	0.956
11.	Niger	3.309	0.098	33.904	0.0000	0.977
12.	Nigeria	8.367	0.906	9.231	0.0000	0.759
13.	Senegal	6.433	0.552	11.660	0.0000	0.834
14.	Sierra Leone	9.735	0.967	10.067	0.0000	0.790
15.	Togo	2.669	0.309	8.627	0.0000	0.734

**Source: Researchers' Computation Using Eviews 10.**

Table 4.2 reveals an interesting result on the effect of government expenditure on economic growth of West African countries. It is evident from the result that government expenditure does not only positively affect economic growth in all the fifteen countries, but such effect is also statistically significant. The magnitude of such effect ranges from 1.996 for Guinea Bissau to 9.735 for Sierra Leone. The implication here is that a unit percentage increase in government expenditure in Guinea Bissau will lead to a 1.996% increase in economic growth, while a unit percentage increase in government expenditure in Sierra Leone will lead to a 9.735% increase in economic growth. Similar explanations can be given to each of the countries based on the coefficients. For instance, a unit percentage increase in government expenditure in Nigeria will lead to an 8.367% percentage increase in economic growth. The R-squared values for each of the countries indicate a high goodness of fit ranging from 73.4% to as high as 97.2% for Togo and Cote D'Ivoire respectively. Exceptions





to these high coefficient of determination are for Cape Verde (0.482 = 48.2%) and Guinea Bissau (0.530 = 53.0%). Since government expenditure is observed to exert a positive and significant effect on the economic growth of West African Countries, a panel analysis is therefore conducted to examine whether government expenditure is growth promoting in West Africa, jointly.

### Panel Regression Estimates

The general effect of government expenditure on economic growth in West Africa is determined through the fixed effect least squares dummy variable panel regression approach. The result is presented in Table 4.3.

**Table 4.3: Estimated linear relationships between economic growth and government spending in West Africa (1990-2018). Dependent variable: Economic Growth**

Method: Fixed Effect LSDV			Dependent Variable: Economic Growth		
Variable	Coefficient	Standard Error	t-statistic	Probability	R-squared
<b>Total Government Expenditure</b>	2.7647	0.8382	3.30	0.0001	0.9167
Wald (joint): $\chi^2(1) = 10.88 [0.001]**$			Number of observation = 408		
Wald (dummy): $\chi^2(15) = 95.59 [0.000]**$			Number of parameters: 16		

Source: Researchers' Computation Using EViews 10.

We first of all test the significance of the group effects with a Wald (dummy) test. Given that the test is significant at 5% level, we can conclude that the individual country's effect of government expenditure on economic growth is not the same across the West African sub-region. This is evidenced in Table 4.2, where we observed the nature and size of the coefficient. Also, the Wald (joint) test, being significant at 5% level, is an indication that government expenditure affects economic growth in West Africa generally. Going by the coefficient, a unit percentage increase in government expenditure will lead to a 2.7647% increase in the economic growth of West Africa in general. This coefficient is also positive and statistically significant. The R-squared (0.9167) is an indication that 91.67% of the total variations in the economic growth in West Africa is explained by the variations in the government expenditure.

### CONCLUSION AND RECOMMENDATIONS

This paper examined the effect of government expenditure on economic growth of West Africa. Findings of the study revealed that government expenditure exerted a positive and significant effect on the economic growth of West African countries and West Africa in general. Also, we also noticed that the magnitude of the effect varies from country to country. Based on the findings, the paper concluded that government expenditure is growth promoting in the West African sub-region. The paper therefore recommended that governments of West African countries should increase its spending on components of public expenditure which will in turn promote investment in the country' private sector. This, as captured in the Ram's model, will propel growth in diverse sectors of the economy.

For full harnessing of government expenditure to promote growth, governments of West African countries should embark on aggressive fight against corruption and misappropriation of public funds as well as instilling financial discipline on public offices.

## REFERENCES

- Afonso, A. and Tovar, J. (2011). Economic performance and government size. *European Central Bank Working paper series*, No. 1399.
- Basil, D. (2000). Public sector and economic growth: the Greek experience. *Applied Economics*, 32(3), 277 – 288. DOI: <http://dx.doi.org/10.1080/000368400322705>
- Emori, E. G. Duke, S. B. and Nneji, I. D. (2015). Impact of public expenditure on economic growth in Nigeria. *International Journal of scientific research and management (IJSRM)*, 3(2), 3694 – 3700.
- Gukat, B. T. (2015). An empirical analysis of the relationship between government expenditure on human capital and economic growth in Nigeria. *Journal of economic and financial issues*, 3(1), 1-13.
- King, R. G. and Rebelo, S. (1990). Public policy and economic growth development neoclassical implication. *Journal of Political Economy*, 98, 126 – 150.
- Kolluri, B. R. *et al.* (2000). Government expenditure and economic growth: evidence from G7 countries. *Applied Economics*, 32(8), 1059 – 1068.
- Kormendi, R. C. and Meguire, P. G. (1985). Macroeconomic determinants of growth: cross-country evidence. *Journal of Monetary Economics*, Vol. 16, pp. 141-163. DOI: [http://dx.doi.org/10.1016/0304-3932\(85\)90027-3](http://dx.doi.org/10.1016/0304-3932(85)90027-3)
- Landau, D. (1983). Government expenditure and economic growth: a cross-country study. *Southern Economic Journal*, Vol. 49, pp. 783 – 792.
- Lee, J. C., Won, Y. J. and Jei, S. Y. (2019). Study of the relationship between government expenditure and economic growth for China and Korea. doi:10.20944/preprints201910.0162.v1
- Nwaka, I. D. and Onifade, S. T. (2015). Government size, openness and income risk Nexus: new evidence from Some African countries (No. WP/15/056). In: AGDI working paper.
- Ono, H. (2014). The government expenditure-economic growth relation in Japan: an analysis by using the ADL test for threshold cointegration. *Applied Economics*, 46(28), 3523 – 3531.
- Ram, R. (1986). Government size and economic growth: a new framework and some evidence from cross-section and time-series data. *American Economic Review*, Vol. 76, pp. 191 – 203.
- Robinson, R. (1977). Dependency, government revenue and economic growth (1955-1970). *Studies in Comparative International Development*, Vol. 12, pp. 3 – 28.
- Sáez, M. P., Álvarez-García, S. and Rodríguez, D. C. (2017). Government expenditure and economic growth in the European Union countries: New evidence. *Bulletin of Geography, Socio-economic Series* / No. 36, 127-133.
- Udoka, C. O. and Anyingang, R. A. (2015). The effect of public expenditure on the growth and development of Nigerian economy (1980-2012). *International Review of Management and Business Research*, 4(3), 823 – 833.



International Journal of Social Sciences and Conflict Management  
ISSN: 2536-7234 (Print); 2536-7242 (Online)  
Volume 5, Number 1, March 2020  
<http://www.casirmediapublishing.com>

Yasin, M. (2011). Public spending and economic growth: empirical investigation of Sub-Saharan Africa. *South western Economic Review*, vol. 30, pp. 59 – 68.