

Public expenditure and economic growth in WAEMU countries.

Dépenses publiques et croissance économique dans les pays de l'UEMOA.

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Abstract

The objective of this study is to assess the effect of public expenditure on economic growth in WAEMU countries. Using a sample of seven (07) countries, we estimate the model of the effect of public spending on economic growth using the dynamic ordinary least squares (DOLS) estimator over the period 1990-2020. Our results show that total public spending positively and significantly influences economic growth in WAEMU countries. A disaggregation of total public expenditure into consumption expenditure, investment expenditure and recurrent expenditure was carried out; the results reveal that consumption and investment expenditure significantly and positively influence economic growth in WAEMU countries while recurrent expenditure has a significantly negative effect on economic growth in WAEMU countries.

Keywords: Public expenditure; Economic growth; WAEMU; Stationarity; DOLS

Résumé

L'objectif de cette étude est d'évaluer l'effet des dépenses publiques sur la croissance économique des pays de l'UEMOA. A partir d'un échantillon de sept (07) pays, nous estimons le modèle de l'effet des dépenses publiques sur la croissance économique en utilisant l'estimateur des moindres carrés ordinaires dynamiques (DOLS) sur la période 1990-2020. Nos résultats montrent que les dépenses publiques totales influencent positivement et significativement la croissance économique des pays de l'UEMOA. Une désagrégation des dépenses publiques totales a été effectuée en dépenses de consommation, dépenses d'investissement et dépenses de fonctionnement ; les résultats révèlent que les dépenses de consommation et d'investissement influencent significativement et positivement la croissance économique des pays de l'UEMOA tandis celles de fonctionnement exercent un effet significativement négatif sur la croissance économique des pays de l'UEMOA.

Mots clés : Dépenses publiques ; Croissance économique ; UEMOA ; Stationnarité ; DOLS

Introduction

Achieving sustainable economic growth and development is a concern for all economies in the world, especially for Sub-Saharan African (SSA) countries that are at the lower end of the growth scale (Seyram et al., 2019). Public finances are the result of public policies aimed at improving economic growth. However, these policies are relatively accomplished on public spending and returns. Therefore, knowledge about the trend, landscape, and degree of the effects of changes in public spending on economic growth is energetically important such as capital goods, consumer goods, and personnel expenditures that are included in public spending (Piana, 2001). In general, a persistent increase in the function of the state when new functions are continuously assumed and the old ones are performed more efficiently, there is a tendency to increase public spending (Wagner, 1883). But then, the increase in public expenditure depends on greater state wealth (Cameron, 1978). Public spending is traditionally considered to be a factor in stimulating economic growth. Indeed, in accordance with Keynesian logic, public spending can exert a significant countercyclical influence on the fundamental variables of economies, notably on consumption and investment.

The aspiration in the development of the Convergence, Stability, Growth and Solidarity Pact (CSGP) within WAEMU is simply a policy of monitoring monetary policy spillovers to bring fiscal variables under community control. In the specific case of this grouping of eight West African countries that share the CFA franc and the Central Bank of West African States (BCEAO), the accumulation of budget deficits, their structural nature and the problems generated by such a situation The accumulation of budget deficits, their structural nature and the problems generated by such a situation, i.e., the risk of unsustainability of public debt and the crowding out effects that could hamper private sector performance, have led the Union's authorities to issue a number of recommendations to member states in the area of public financial management. Indeed, the literature emphasizes, and developments within the Union have demonstrated (1975-1985), the difficulty of promoting economic efficiency without a good combination of monetary and fiscal policies (Devarajan and Wlton, 1994; Semedo and Villieu, 1997).

A predominant goal of public spending policy is clearly sustainable and equitable economic growth. Many public programs are specifically aimed at promoting sustainable and equitable economic growth. Public spending plays an important role in physical and human capital formation. Appropriate public spending can also be effective in stimulating economic growth, even in the short run. Therefore, the effect of public spending on economic growth can be a

comprehensive indicator of the productivity of public spending. Ideally, the components of such an indicator should be measurable: the contribution of public spending outputs to economic growth and the efficiency with which that spending produces its results. Theoretically, there are two opposing views, Keynes' and Wagner's, on the association between economic growth and national income. By Wagner's law (1890), as real per capita income increases, government spending also increases. The causal link must run from national income to government spending, and by increasing economic growth, government spending also increases. Although according to Keynesians, economic growth is due to government spending. Furthermore, Keynes believes that in order to improve economic growth (both in the short and long run), government spending must be increased. According to the Keynesian view, causality must flow from government spending to national income. In recent decades, the issue of public spending and economic growth in developing countries, particularly those of the WAEMU countries, has remained a topical issue, making the study of the role of public spending and economic growth a particularly important research topic. Considering that proper handling of expenditures leads to better economic growth, we ask the following question: What is the effect of public spending on economic growth in WAEMU countries? The objective of this paper is to assess the effect of public spending on economic growth in WAEMU countries. This objective stems from the scant literature on the WAEMU in relation to public spending and economic growth. To this end, we consider a sample of seven (07) WAEMU countries over the period 1990-2020 while using the DOLS estimation technique.

The remainder of this paper is organized around the following points: Section 1 presents a synthesis of the literature on public spending and economic growth; Section 2 focuses on the presentation of the methodology adopted. The results of the estimations are analyzed in section 3, while the conclusions drawn from the analyses are presented at the end of section 3.

1. Review of the literature

Economic theory shows how government expenditure can be good or bad for economic growth. In traditional Keynesian macroeconomics, many types of government spending can positively participate to economic growth through a multiplier effect on aggregate demand Okoro (2013). On the other hand, government consumption will crowd out private enterprise investment, inhibit economic recovery in the short term and reduce capital accumulation in the long term. The first of all national growth theories is Wagner's Law of Increasing State Activity. According to Wagner, public goods are increased as a result of increased demand from industrial workers at the expense of private sector growth (Gandhi, 1971; Goffman and Mahar, 1971).

Keynesian theory states that government expenditure can positively influence economic growth. Thus, a rise in government consumption may increase employment, profitability, and investment through a multiplier effect on aggregate demand Barro (1990). As a result, government spending increases aggregate demand, causing output to grow in proportion to the multiple of spending. Support for these theories has varied, causing them to lose some momentum. Externalities from government spending support growth by raising productivity in the sector. Here, higher levels of such spending allow for high growth rates. The contrasting nature of crowding out and externalities stems from the assumption that spending patterns, not just their levels, matter significantly.

Barro stated that the size of government significantly influences the rate of economic growth. He considered that spending to create infrastructure, such as spending on equipment and transport (roads, highways, railroads, etc.), makes the productive activity of private firms more efficient. The model developed by Barro (1990) consists of considering a collective inter-temporal Cobb-Douglas type production function that renders three inputs, namely capital K , labor L and government spending G . thus the equation:

$$Y = AK^{\alpha}L^{\beta}G^{\gamma}$$

For BARRO, government spending has two opposing effects:

- A negative effect by increasing the tax rate;
- A positive effect by increasing per capita spending, since the increase in the latter makes it possible to increase the marginal productivity of capital, and subsequently to increase the growth rate.

In the literature, the relationship between government spending and economic growth has been examined extensively, with some controversy. Studies such as Kormendi and Meguire (1985), Aschauer (1989), Barro (1990); and Fischer (1993), among many others, have examined the effects of aggregate government spending shocks on growth and productivity. However, focusing on modeling the relationship between government spending and economic growth in Morocco, Obad and Jamal (2016) applied the ARDL (Autoregressive Distributed Lag) estimation method to model the long-run and short-run dynamics of the impact of total government spending on the growth rate in Morocco. The results of the estimations, in the framework of the specification used, lead to the conclusion that there is a negative impact of public spending on economic growth. These results can be explained essentially by the unproductive nature of public spending and a structure characterized by the heavy burden of the debt, compensation, and the weight of the wage bill.

In proposing to carry out an empirical evaluation of the relationship between public expenditure components and economic growth in Togo, based on Congolese data, Togbenu

Togbenu (2018) aimed to analyze the relationship between public expenditure components and economic growth in Togo. Using data from the World Development Indicators for Togo over the period 1980-2010, the author sought to determine the existence of causal links in the sense of Granger between the components of public spending and growth and if so, the direction of these links. The results of the estimation indicate the non-existence of causality in the sense of Granger between the various components of public spending and economic growth in Togo.

Echaoui and Skikra (2021) conducted a study to determine the effect of public spending on growth in Morocco over the period 1980-2016. To do so, they opted for a quantitative approach highlighting statistical analyses of the variables studied, and an econometric study based on multiple linear regression through the ordinary least squares method. The results obtained from this study show that public operating and investment expenditures have a weakly significant positive effect on economic growth.

2. Study Methodology

This section consists of two paragraphs. The first presents the theoretical and empirical models used. The second presents the estimation procedure for the empirical model, the data and the study period

2.1. The theoretical model

The theoretical analysis of economic growth using Solow's (1956) approach is considered the starting point for growth models incorporating technical progress. Although his model is based on the exogenous behavior of technical progress, for Solow (1956), in the long run, growth comes from technical progress even if it is considered a residual. Solow's (1956) model is based on a production function of the Cobb-Douglas type whose generally accepted form is as follows:

$$Y = F(K, L) = AK^\alpha L^\beta \text{ avec } \alpha + \beta = 1 \quad (1.1)$$

This production function does not account for government spending in either preferences or production technology. After the criticism of this model, several other studies have prompted other growth models. Among the most relevant are those of Barro (1990) and Turnovsky (1992), who include public spending in their analysis.

The author uses a Cobb Douglas type production function, and the model becomes:

$$Y_{it} = F(Kpu_{it}, Kpr_{it}, L_{it}) \quad (1.2)$$

Where Y_{it} is gross domestic product (GDP); Kpu_{it} (PG_{it}) government spending; Kpr_{it} ($INVPR_{it}$) real private investment and L_t labor force. In summary, the model is of the form:

$$Y_{it} = F(Kpu_{it}, Kpr_{it}, L_{it}) = AKpu_{it}^{\alpha} Kpr_{it}^{\beta} L_{it}^{\gamma} \text{ avec } \alpha + \beta + \gamma = 1 \quad (1.3)$$

The log-linear form is presented as follows:

$$y_{it} = \ln A + \alpha \ln Kpu_{it} + \beta \ln Kpr_{it} + \gamma \ln L_{it} \quad (1.4)$$

2.2. Empirical specification

Having revisited the theoretical foundations underlying the effect of public spending on economic growth in WAEMU countries, we will now draw on them to pose the models used in this research. Based on the theoretical arguments presented above and following Buari et al (2020), Moussavou (2017), Ejaz et al (2019), Togbenu (2018) and Thiao (2019), we develop an econometric model to analyze the effect of public spending and its components on economic growth in WAEMU countries according to the following equation (1.5):

$$\ln(GDP)_{it} = \alpha_0 + \beta_1 \ln(PG)_{it} + \alpha_1 \ln(CAP)_{it} + \alpha_2 \ln(INVPR)_{it} + \alpha_3 GER_{it} + \alpha_4 OUV_{it} + \alpha_5 INF_{it} + \varepsilon_{it} \quad (1.5)$$

cap (Labor Force): the amount of labor supplied in an economy is proportional to the labor force; the latter is assumed to have a positive influence on output, with a threshold effect, due to diminishing marginal returns. ger (Gross Secondary Schooling Rate): an increase in the share of the working population with at least secondary schooling is assumed to have a positive impact on economic growth, in line with the results obtained by the main endogenous growth theorists (Lucas, 1988; Romer, 1990). Indeed, an increase in the proportion of the working population that is educated contributes to the strengthening of human capital, defined as the set of factors incorporated into the human being and which make it possible to increase his productivity (Logossah, 1994). Total public spending on growth is introduced into our growth equation to capture the overall effect of public spending on the growth of WAEMU economies. pg (the increase in public spending): given the wealth and diversity of empirical results on the impact of public spending on growth, it seems difficult to make an a priori statement on the expected sign of such a relationship in the WAEMU context. The degree of openness is used to assess whether external trade is favorable to tax revenues and will make it possible to assess the external dependence of WAEMU countries. In addition, the process of increasing competitiveness that it suggests, in addition to foreign exchange gains and increased national

savings, may be favorable to economic growth. It should be noted that this variable was introduced into the equation to take into account the specificity of the economies of the EU countries, which are small open economies. *invpr* (real private investment): real private investment is a growth factor, both for the neoclassical school and for Keynesian theory. Moreover, it is likely to generate externalities, in accordance with the recent results of endogenous growth models (Guellec and Ralle, 1997). Empirical studies of African economies (Ojo and Oshikoya, 1995; Ghura and Hadjimichael, 1996) have shown a positive relationship between investment and per capita GDP growth. *Inf* (inflation rate): The inflation rate in WAEMU countries has an ambivalent relationship with the growth rate. In short, the expected sign of this variable is indeterminate, insofar as the value of its parameter depends on the relative evolution of money supply, money demand and the supply shock.

2.3. Data and estimation method

This study uses annual data covering the period 1990-2020 for WAEMU countries. The 1990-2020 period is chosen because of the availability of variables. The data used in this study are secondary data from the World Development Indicators (WDI) 2021 statistical database.

In order to achieve the objective of this first chapter of the thesis, econometric estimations were conducted. According to Pedroni (2000; 1996), the use of ordinary least squares (OLS) on cointegrated panel data will yield biased estimators because the estimators will depend on nuisance parameters associated with the dynamic nature of the model. For him, OLS can only be used if we have exogenous regressors and homogeneous dynamics among the individuals in the panel.

We therefore used the dynamic ordinary least squares (DOLS) technique to determine the effect of government spending and its components on economic growth in WAEMU countries. This estimation technique (DOLS) has the advantage of correcting for finite sample size, endogeneity bias and serial correlations (Österholm et al., 2007). According to Phillips (1995), the estimation technique (DOLS) performs better when the time horizon is larger than the sample size ($T > N$)

3. Presentation of the results and discussions

3.1 Study of stationarity tests

In the context of the study of stationarity, given that the number of countries retained in our model is relatively small compared to the study period and the data are time series, we first proceed to the Pesaran (2004) cross-sectional dependence test. The results of the Pesaran (2004) cross-sectional dependence test reject the hypothesis of cross-sectional independence between

the panel countries at the 1% threshold. From this result, the second generation unit root tests are more appropriate in this context.

Table 1. Summary of the results of the order of integration of the variables in the model

Variables	Stationary in level	Results of the integration	Stationary in first difference	Results of the integration
	P-value of CIPS at 5%.	order	P-value of CIPS at 5%.	order
Lgdp	-2.792**	I(0)	-	-
Lpg	-2.409**	I(0)	-	-
Lpcu	-1.726	-	-5.038**	I(1)
Lpgi	-2.183	-	-5.695**	I(1)
Lpfc	-2.144	-	-5.834**	I(1)
linvrpr	-1.232	-	-5.448**	I(1)
Lcap	-4.258**	I(0)	-	-
Ger	-4.078**	I(0)	-	-
Ouv	-2.350**	I(0)	-	-
Inf	-5.380**	I(0)	-	-

Source: Compiled by the authors from (WDI, 2021)

The results of the unit root tests indicate that the Pesaran (2004) level test statistics allow us to accept the null hypothesis of non-stationarity for five (4) of the ten (10) variables such as: public final consumption expenditure (lpcu), investment expenditure (lpgi), operating expenditure and real private investment (linvrpr) at the 5% threshold. After the first differentiation, these tests make it possible to reject the hypothesis of non-stationarity for all the variables at the 5% threshold. The results of the stationarity analysis of the series indicate that all the series are integrated of order 1 (I(1)).

After performing the stationarity test, the next step in our study is none other than the implementation of the co-integration tests. The study of possible co-integration relationships occurs when the unit root tests reveal that the variables are non-stationary in level. There are several traditional approaches to co-integration tests on panel data such as: the Pedroni test (1995, 1999, 2004), Kao (1999) and Westerlund & Edgerton (2007). This paper uses the Pedroni (1999) test because of our relatively short sample size. Also, this test has the advantage of taking into account the heterogeneity of the intercepts and slopes of the cointegration equation.

3.2 Co-integration study

Table 2. Results of the Pedroni co-integration test

	statistic	p-value
Modified Phillips-Perron t	1.918	0.028
Phillips-Perron t	-3.570	0.000
Augmented Dickey-Fuller t	-2.101	0.018

Source: Compiled by the authors from (WDI. 2021)

The three statistics are all significant at the 5%, 1% and 5% level respectively, so the hypothesis of non-cointegration is rejected. Hence, there is a long term relationship between all the variables of our study model. In summary, there is a co-integration relationship between all the variables of the study model.

3.3. Results of the estimation and discussions

3.3.1. Results of the estimation of equation (1.5)

We have carried out the estimates in two regressions in order to avoid problems of multicollinearity. In this perspective, the first regression took into account total public spending and the second the components of public spending.

Table3. Estimation of the Model (equation (1.5))

Variables	Regression 1			Regression 2		
	Coefficient	Standard error	Probability	Coefficient	Standard error	Probability
lpg	0.554***	0.045	0.000	-	-	-
lpcu	-	-	-	0.428***	0.064	0.000
lpgi	-	-	-	0.379***	0.061	0.000
lpfc	-	-	-	-0.025***	0.005	0.000
linvpr	0.063***	0.016	0.000	0.017	0.014	0.227
lcap	0.521***	0.079	0.000	-0.024	0.093	0.796
ger	1.085***	0.189	0.000	1.037***	0.161	0.000
ouv	1.162***	0.254	0.000	0.470**	0.240	0.050
inf	-0.996***	0.295	0.001	-0.818***	0.249	0.001
cons	-4.069***	1.027	0.000	5.182***	0.773	0.000

Legend: *p-value < 10%, **p-value < 5%, ***p-value < 1%).

Source: Compiled by the authors from (WDI. 2021)

3.3.2. Discussions

Estimates made using the DOLS technique show that total public spending has a positive and significant effect on economic growth in WAEMU countries. In order to gain specific knowledge of the impact of the components of public spending on growth, public spending was disaggregated to isolate public consumption expenditure (pcu), public investment expenditure (pgi) and operating expenditure (pfc). The results show that public consumption expenditure

has a positive and significant effect on economic growth in WAEMU countries. As for public investment expenditure, it has a positive and significant positive effect on economic growth in WAEMU countries. This result confirms those obtained by endogenous growth theorists (Lucas, 1988; Romer, 1990) who show the generally positive impact of public investment spending, particularly in transport, health and education infrastructure, on economic growth. The role of public investment as a producer of positive externalities highlights the difficulty of accurately estimating the real impact of such expenditure on growth and, above all, the period from which this impact should be assessed. As far as operating expenditures are concerned, they have an overall and significantly negative impact on economic growth in the countries in our study sample.

These results confirm the difficulty of establishing with certainty the meaning, nature and scope of the impact of public spending on growth. While they may seem to corroborate those of Devarajan, Swaroop and Zou (1996), who find a positive effect of public spending in general on growth, they nevertheless contradict the results of Easterly and Rebelo (1993), Ojo and Oshikoya (1995), Singh et al. (1984), Barro (1997) and, above all, Tanzi and Zee (1997), who argue for a differentiation to be established between the direct and indirect effects of public spending on growth. Despite such results, the question of the actual destination of the expenditures incurred by the representatives of the public authorities deserves to be asked, in connection with the significantly negative impact of operating expenditures in terms of contribution to economic growth, or they have been diverted from their initial destination, which raises, in the case of our results, the question of good governance of the Union's economies.

The variables that appear to have a negative but not significant impact on growth in the WAEMU economies are real private investment (*linvpr*), the labor force and inflation. As for inflation, it has a negative impact on growth in WAEMU economies. With respect to trade openness, we note a positive and significant impact, which is favorable for all economies. It should also be noted that the gross secondary school enrollment rate has a significantly positive effect on the growth of WAEMU economies. This confirms certain results obtained by endogenous growth theorists (Lucas, 1988; Romer, 1990), relating to the positive role played by human capital on economic growth, as well as those obtained by Tenou (1999) in the case of WAEMU. However, the clearly positive impact of the gross secondary school enrollment rate on growth in WAEMU countries leads us to qualify the conclusions that can be drawn from

the previous result, and to consider other channels for transmitting and exercising the impact of public spending on growth.

The existence of non-linearities in the appearance of the effects, positive or negative, of public spending on growth, leads us to qualify the economic policy recommendations resulting from the empirical studies currently available. The positive impact of the gross secondary school enrollment rate on growth in the majority of WAEMU economies should encourage WAEMU governments to devote a significant share of public spending to education. In addition, as much as the amount and composition of public spending, the way it is financed plays a key role in determining the impact of public spending on overall growth. Indeed, the optimal allocation of total spending (public and private) is essential for the achievement of healthy and sustainable growth in the WAEMU.

Conclusion

The objective of this study is to assess the effect of government spending on economic growth in WAEMU countries using a sample of time series data from 1990-2020 (for 31 years). There is an extensive empirical literature on the relationship between government spending and economic growth. However, the procedure is still inconclusive. Theoretically, this is not surprising since small or large government in itself is not an asset. In any case, the theory predicts not only that fiscal policy affects growth through the level of government spending but also through the structure of spending. Public spending is in a number of cases indispensable, especially with regard to the financing of the regalian activities of the States (security, education, health). Thus, the main lesson of this study is that public spending can significantly and positively promote growth in WAEMU economies. The theoretical basis of the study is that of Barro (1990), while drawing on the neoclassical approach of Solow (1956) and Swan (1956). The results were fairly consistent, if a bit surprising.

On the one hand, a positive correlation indicates the efficiency of public spending in WAEMU countries. Favorable macroeconomic conditions accompany investment productivity. These results contradict those of Diamond (1989) and Devarajan et al. (1996).

Despite these results, the positive impact of public spending on growth in WAEMU countries requires attention to the issue of the quality of public spending in a context of shortfalls in the sources of expenditure financing. The focus of this study has been on the macroeconomic impact of public spending on economic growth. Particular attention should be paid to microeconomic and sectoral aspects in order to make a comprehensive assessment of the impact of public spending on growth in WAEMU economies.

As with other empirical studies, it is difficult to draw firm conclusions about the impact of public spending on growth. There are obvious data inconsistencies, classification of expense categories, and omission of factors affecting the growth process. Intuitively, the productivity of different types of spending can be judged by the degree to which they are positive for private investment and the degree to which they affect individual income. Although certain expenses can be considered unproductive in theory, in practice they affect personal income and thus income. In this context, therefore, general recommendations to increase the share of public investment in developing country budgets may be misleading.

It is the productivity, not the level, of investment that clearly matters. These results are interesting insofar as these countries form an economic and monetary union, with the important objective of achieving nominal, real and structural convergence. Since the primary interest of convergence is to improve the transmission of community policy measures to all economies, it seems essential to work to accelerate the process. In addition, an examination of the recall force (or error correction coefficient) of the equation in the error correction model shows a high degree of homogeneity in the response times of economic growth to public spending in the various WAEMU countries.

On the other hand, we found that real private investment, by its nature, which should promote growth, has a negative impact on economic growth in all WAEMU economies. The results highlight the fact that it should not be assumed that real private investment is growth-enhancing. In WAEMU countries, this is not the case, and if there are complementarities between public and private investment, it is possible that real private investment is not considered to be growth-enhancing. This may also explain why public spending seems to have had such an impact on growth. With regard to inflation, we noted its negative impact on growth in WAEMU countries, as well as the labor force. As regards other variables such as the gross enrollment ratio and openness, they favor growth in the short term as well as in the long term in WAEMU countries. A good quality of governance can be a key factor in public expenditure management. It can limit mismanagement and embezzlement. This study did not take this aspect into account. Future studies could analyze the mediating role of governance in the relationship between public spending and economic growth.

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