# Government Spending and Economic Groweth Nexus: An Econometric Analysis

*Mathew Owusu-Mensah*
Accounting and Finance Department,
Accra Technical University, Accra, Ghana
*Christiana Afriyie Manu*
Marketing Department, Accra Technical University, Accra, Ghana
*Peter Arhenful*
Accounting and Finance Department,
Accra Technical University, Accra, Ghana

**Abstract**
Proponents of larger governments argue that government programmes provide essential public goods like education and infrastructure, which, in turn, stimulate the economy. On the other hand, individuals who advocate for more limited government assert that an increase in public spending will be detrimental to economic expansion due to the fact that many functions of government are inefficient and not in the public interest. In light of this, it is important to comprehend how different facets of government spending impact economic growth. The research utilised panel unit root tests, specifically the Pesaran and IPS tests, and panel cointegration techniques, including Pooled Mean Group and Dynamic Fixed Effect. Additionally, secondary data from World Bank indicator variables spanning from 1985 to 2021 were analysed in 32 countries located in Sub-Saharan Africa. The results of the study suggest that there exists a correlation between government expenditure and economic growth, in both the immediate and distant future. Additionally, the study emphasises the importance of institutional quality as a significant determinant of this relationship. Therefore, it is recommended that all accessible government

funds be allocated towards the objective of establishing durable and self-sufficient infrastructure.

---

**Keywords:** Sub-Sahara Africa; Recurrent Expenditures; Capital Expenditures; Government Expenditures; Economic Growth

## 1.0    Introduction

Economic growth is required for long-term sustainability. The rise in people's living standards and the expansion of the economy are inextricably linked. The primary aim in combating pervasive poverty and providing cause for optimism regarding the prospect of societal advancement is to expand the economy. In most cases, it is computed as the percentage increase in a nation's real GDP from one year to the next (Ruiz, 2018). Two of the most important things that the government does are provide certain public goods, as well as protection (and sometimes even security) (Ostrom & Ostrom, 2019). Establishing the rule of law and upholding property rights are both components of the protection function, which is responsible for keeping citizens safe. This reduces the likelihood of criminal activity, safeguards individuals and their property, and strengthens the nation's defences against invasion from other countries.

The provision of power, roads, defence, education, and health care are all examples of public goods. However, this list is not exhaustive. Increasing the amount of money spent by the government on social and physical infrastructures is believed by some academics to be conducive to economic expansion. Spending by the government on areas such as healthcare and education, for example, can increase worker productivity and foster the expansion of a nation's overall output. Investing in infrastructure (including roadways, communication networks, and power plants), on the other hand, reduces the costs of production, encourages investment from the private sector, and increases the profitability of businesses, all of which contribute to economic expansion. Researchers such as Popescu (2021) and Onoja (2015) believe that increasing the size of the government's spending contributes to economic expansion.

The two primary categories of expenditures made by the government are as follows. These costs are incurred only once and will continue indefinitely. The costs incurred by the government to carry out its ongoing responsibilities are referred to as recurrent costs. It is considered a spur-of-the-moment purchase for one's own personal use. "Government capital spending" refers to the amount of money spent by the government on investments that raise the country's total capital stock (Fournier, 2016). One of the many goals that governments work to achieve through spending is an increase in the income that is earned by each individual citizen.

In the most recent decades, policymakers have placed a greater emphasis on the discussion regarding the capacity of government spending to stimulate economic growth. It is not entirely clear whether the widespread adoption of government spending as a tool of fiscal policy has had a beneficial impact on the expansion of the economy (Hasnul, 2015). Despite the country's unusually high public debt rates and overall economic crisis, the Ghanaian economy continues to stand out in this fascinating field, thanks to some research on the subject. This is the case even though there has been much discussion about the relationship between government spending and economic growth (Reinhart & Sbrancia, 2015).

Spending by the government is an essential component in the fight against poverty in the vast majority of developing countries, the majority of which are located in Sub-Saharan Africa. This is something that can be accomplished if governmental spending is directed towards programmes (like infrastructure) that will narrow the wealth gap. Because of the swift increase in population and the rising demand for goods and services, governments are forced to spend money to meet the requirements of their constituents. The government may make purchases in an effort to encourage private investment, which will ultimately lead to an increase in GDP. More money is ultimately spent by governments as a direct consequence of this process (Olaoye et al., 2020). Sub-Saharan Africa is comprised of 48 countries that are divided into four sub-regional blocks.

The total land area of Sub-Saharan Africa is approximately 23,638,000 square kilometres. After reaching a rate of 4.0 percent in 1980, the growth of Sub-Saharan Africa's gross domestic product slowed, eventually falling to a rate of -1.2 percent in 1983 and -0.9 percent in 1992. With a GDP growth rate of 3.1% on average between 1980 and 2012, it should come as no surprise that it increased to 6.1% in 2006 before dropping to 4.2% in 2012. (World Bank, 2015). These GDP growth rate figures are particularly interesting because they show that growth rates in Sub-Saharan Africa are currently trending in an uneven and erratic way. This is one of the reasons why these figures are so interesting. Because of significant macroeconomic imbalances, the majority of Sub-Saharan African countries saw a gradual decline in their economic performance from the late 1970s to the early 1980s. This trend began in the 1970s and continued through the 1980s. These imbalances included widening budget deficits as well as expanding current account balances (Dramani, 2010).

In order to bring the macroeconomy back into balance and stimulate growth, governments have adopted more stringent fiscal policies, which have either increased taxes, primarily on the formal sector, or reduced spending (Ismaila & Imoughele, 2015). These decades were irretrievably lost for Africa's economic development. After some time had passed, the World

Bank and the International Monetary Fund (IMF) made recommendations regarding programmes of structural adjustment to assist in the implementation of these policies (Thomson, Kentikelenis & Stubbs, 2017). These programmes were implemented in a variety of nations, including Ghana, Kenya, Zambia, and Senegal, to name a few. For example, the National Development Plan, which was carried out in Kenya from 1997 to 2001 and was recognised by the government as structural reform, was put into effect during that time period. The plan acknowledged investment from the private sector as a primary engine of expansion during that time period (Bhattacharya, Oppenheim & Stern, 2015). In 1997, Kenya's gross domestic product (GDP) growth rate was less than 1%, but it increased to 3% that same year and then increased to 4% by the time the development plan was fully implemented in 2001. Despite this, between 1997 and 1999, government spending (as a percentage of GDP) remained unchanged at 16%; however, in 2000, it decreased by 1%. In 2001, it reached a percentage of 16 percent (World Bank, 2015).

Conversely, Ghana commenced the implementation of the Economic Recovery Programme (ERP) in April 1983. During the period spanning from 1983 to 1986, the Enterprise Resource Planning (ERP) system was implemented as a measure to sustain economic expansion. The Ghanaian government augmented the Economic Recovery Programme (ERP) in 1986 to encompass the Structural Adjustment Programme (SAP) with the aim of tackling distinct structural challenges that existed within the economy. This action was taken to mitigate specific structural concerns that had persisted over an extended period. Following the adoption of ERP/SAP, Ghana experienced a notable upswing in its growth rate, transitioning from a negative rate of 5% in 1983 to a positive rate of 8% in 1984. The aforementioned transformation was instigated by an enhancement in the nation's capacity to monitor and scrutinise data. Concurrently, there was a rise in public expenditure from 6% to 7% within the identical timeframe. According to Bank of the World's publication in 2015...

Advocates of bigger governments frequently contend that government-run programmes are accountable for providing crucial public goods, such as infrastructure and education. Serageldin and Grootaert (2017) have posited that governments play a significant role in fostering economic growth through various means. Several factors are involved in the provision of a functional society, such as the establishment of a legal and social structure, the provision of judicial services, defence and police protection, and the safeguarding of property rights. Additionally, addressing market imperfections, constructing economic infrastructure, regulating externalities, and allocating funds to promote social cohesion and enhance labour force productivity are essential components of this process (Liu, Li & Yang,

2018). In addition, it is plausible that governmental endeavours can incentivize entrepreneurs to establish their own enterprises, amplify private investment, and ultimately facilitate the growth of the economy through the synergistic collaboration of public and private capital formations (Ostrom & Ostrom, 2019).

Conversely, advocates of limited government contend that an expanded government could impede economic development due to the inefficacy and misalignment of many of its pursued initiatives with the authentic concerns of the broader public. This assertion is made based on the premise that a government with a larger size of operations tends to have a higher number of employees. The inefficiencies in the delivery of government output may arise due to various factors such as the bureaucratic decision-making process in the public sector, the political strategy of promoting the interests of cohesive minorities at the cost of society, and the activities of interest groups that advocate for the diversion of resources towards rent-seeking endeavours to redistribute income in their favour.

Furthermore, it has been argued that a number of the monetary and fiscal policies implemented by the government may have the effect of distorting economic incentives and diminishing overall system efficiency (Smets, 2018). In the present context, taxes and transfers are perceived as factors that reduce the motivation for engaging in employment and investment by causing market prices to deviate from their natural state (Collado, 2016).

## 1.1    Problem Statement

It has been extensively researched in the literature that for SSA countries, the association between output growth and public expenditure is directly proportional (Nurudeen & Usman, 2010; Usman & Agbede, 2015; Kimaro et al., 2017; Ademuyiwa & Adetunji, 2019). The effect of public spending on economic growth in SSA was the primary focus of these studies, rather than the varying degrees of economic success experienced by the various nations. None of these studies has differentiated between the African nations of sub-Saharan Africa that have higher and lower incomes (upper- and middle-income countries).

Policymakers will need to know which aspects of government spending contribute significantly and favourably to output growth in SSA's low- and middle-income economies. It will be possible to design policies that are specific to each income level of SSA countries with the help of policy action based on these empirical findings. This study adds to the body of knowledge on output growth and public spending by categorising SSA countries into three low and middle-income (upper and lower) groups.

The novelty of this study lies in the fact that it examines the relationship between public spending and economic growth while taking into account the varying levels of income in SSA countries. First things first, this study is essentially the first one of its kind because it analyses SSA according to the classification of income levels used by the World Bank. This is extremely important to keep in mind when attempting to draw conclusions regarding the relationship between spending and output growth in the upper and lower countries of SSA. In some earlier studies, SSA nations were classified according to their respective regional locations. Even though they are located in the same general region, some countries' economic outlooks couldn't be more different from one another. The policymakers will learn from the analysis based on income classification what the governments of low-income countries should spend and do in the process of allocating resources if they want to improve their economies.

Second, the research sheds light on the ways in which powerful institutional traits have an effect on the here and now. The researchers have not considered the impact of institutional quality on the relationship between public expenditure and economic growth. Moreover, it is noteworthy that the Southern and Eastern African regions have been consistently identified as possessing inadequate institutional frameworks (Shobe, 2017; Asamoah, Mensah, and Bondzie, 2019). Therefore, it is imperative to identify the precise institutional elements that impede financial progress in the region, consequently hindering its economic advancement. The reason for this is that the regions of Southern and Eastern Africa are often acknowledged for possessing inadequate institutional frameworks. According to Rodrik's (2000) influential discourse on institutions for achieving growth of high quality, non-market institutions play a crucial role in ensuring the proper functioning of markets, and this principle applies to markets in sub-Saharan Africa (SSA) as well. Social Security Administration (SSA) markets are not exempt from this phenomenon.

## 2.0    Related Literature
## 2.1    Institutional Quality

The definition of institutions used most frequently in recent literature is that provided by North (1991, 1993), who defines institutions as a society's rules of engagement (Aluko & Ibrahim, 2020). According to North, institutions are the constraints that humans have developed to structure human interaction. Formal restrictions include laws, rules, and constitutions. Informal constraints include things like standards of conduct, traditions, and self-imposed codes of conduct. Institutions exhibit enforcement traits as well. Institutional quality refers to an institution's suitability and effectiveness, which determines how well they can distribute resources and

increase productivity. Despite the differences in these definitions, they all refer to the existence of social structures and systems that affect how different sectors of society—from non-market to market sectors—interact with one another. The sufficiency or quality of institutions is represented in this study by Rodrik's five primary institutional categories (Rodrik, 2000). Market efficiency is made possible by these five crucial institutions.

In his work, Rodrik enumerates several establishments, encompassing those dedicated to the safeguarding of property rights, regulation, macroeconomic stabilisation, social insurance, and conflict resolution (2000). Hence, in order to facilitate financial inclusion and expedite economic growth in Sub-Saharan Africa, it is imperative that these five establishments are functioning effectively within the financial markets. According to Rodrik, a crucial inquiry to make in this scenario is identifying the particular institutions that hold significance and determining the means of obtaining them. The inference can be drawn that it is crucial to delve deeper into the institutional foundations of market economies, rather than solely focusing on price reforms. This is exemplified by the interplay between neoclassical economics and developing societies. The likelihood of incentives leading to employment is minimal, and in the absence of sufficient institutions, this circumstance often results in unfavourable consequences.

## 2.2    Overview of Economic Growth in Sub-Saharan Africa

According to Chuhan-Pole et al. (2013), during the mid-1990s, there was a notable upswing in economic growth in Sub-Saharan Africa, following a prolonged period of underwhelming performance. Since 1996, the per capita GDP has experienced an average annual growth rate of 2.4%, leading to a 50% rise in the per capita GDP. Several justifications have been presented for this reversal. Illustrative instances comprise enhanced macroeconomic strategies, escalated overseas assistance, and a noteworthy abatement in the indebtedness of sub-regional countries. Throughout the 2000s, the escalation of commodity prices and the proliferation of mineral resource extraction in various nations exerted a notable influence. During the period spanning from 1996 to 2011, there was a notable difference in the growth rate of GDP per capita between countries that possess abundant natural resources, such as Angola, Nigeria, and Zambia, and those that do not, such as Ethiopia, Rwanda, and Mozambique. Specifically, the former group experienced an average growth rate that was 2.2 times faster than the latter group. The nations endowed with abundant resources have made noteworthy contributions to the recent economic growth of Sub-Saharan Africa. Moreover, the emergence of fresh mineral findings indicates that they are likely to persist in their contribution in the times ahead. It is projected that by the year 2020, a mere four to five countries within the subregion will

have yet to be exploited. According to the authors, the dissimilarity in growth performance can be accounted for by a greater pace of population growth in nations with limited resources compared to those with abundant resources (wherein the overall GDP escalated merely 1.3 times in contrast to 2.2 times in resource-rich countries relative to resource-poor countries).

## 2.3 Theoretical Linkage Between Government Expenditure and Economic Growth

According to Cakerri et al. (2014), the act of augmenting government expenditure through the acquisition of funds from private investors does not generate fresh spending capacity in the economy, a crucial element for the promotion of economic expansion. Rather than initiating new and lucrative endeavours that promote economic expansion, the government's borrowing from private investors leads to the redistribution of existing income. Rather than engaging in wealth redistribution among its populace, the nation's economic expansion is propelled by the generation of fresh purchasing power. Increased government expenditure exerts greater strain on the credit market, thereby stimulating a rivalry for credit availability between the public and private sectors, and subsequently leading to an escalation in interest rates. According to Najmuddin (2020), the theory posits that elevated interest rates have the potential to displace private enterprises and impede the pace of economic expansion. Furthermore, a country's national income multiplier is greater when it is funded by external financial resources rather than internal ones.

The utilisation of external financial resources to finance public projects results in the infusion of new economic resources and mitigates the crowding out effects that arise from increased government spending (Shen et al., 2018). Hence, the utilisation of external financial resources for government spending is deemed more efficacious in stimulating economic growth and circumventing potential threats to the expansion of the private sector. The present argument posits that it is advisable for developing countries to restrict their domestic borrowing practises and factor in the necessity of obtaining external financial resources when expanding their public sectors.

The proportion of imports in overall expenditure is a contributing factor to the deceleration of economic growth resulting from government spending. Many government initiatives in developing countries are dependent on the importation of technology and other essential resources. Consequently, the allocation of public investment spending exhibits a reduced focus on domestic affairs, implying that a greater proportion of governmental demand is being financed by imports. According to Shen et al. (2018), a decrease in domestic bias in public investment can lead to a

deceleration in economic growth as a result of heightened government spending. The primary outcome of the research indicates that fiscal policymakers ought to be mindful of the negative impact of an upsurge in imports on a nation's reserves and real exchange rates, particularly when such imports are funded by domestic financial resources. This assertion holds particularly true in cases where domestic financial resources are utilised to finance the payment for said imports (Shen & Yang, 2018). The topic under consideration pertains to state-specific government spending multipliers and a reduction in the rigidity of nominal wages. The article titled "Journal of Monetary Economics, 98, 11–26" was published in a scholarly journal. Hence, instead of excessive dependence on imports, nations ought to contemplate the significance of enhancing their own capabilities to cater to governmental requisites.

Finally, Gui-Diby (2021) posits that the impact of increasing government expenditure on economic growth is contingent upon the presence of a non-discriminatory tax system. Daun et al. (2015) provide a comprehensive analysis of the taxation system and assert that a nation may accumulate debt when its government spending surpasses its revenue. This phenomenon is prevalent in developing countries, such as the low-income region of Sub-Saharan Africa. The escalation of public debt leads to macroeconomic imbalances that are not sustainable. The private sector may curtail its investment plans in response to the fiscally unsustainable situation where government expenditure surpasses government revenue. The deceleration of private investment can impede economic growth due to its adverse multiplier impact.

To mitigate distortions, it is advisable for governments to evaluate the efficacy of their taxation systems in accordance with the taxation theory of the respective country. Taxation systems ought not to pose a threat to the sustainability of the private sector. Rather, they should be conducive to promoting cooperation between the public and private sectors.
It is imperative for governments in developing countries to prioritise the elimination of budget deficits as a means of preventing the accumulation of debt. Budget deficits can be reduced through a combination of government spending cuts and increased tax revenues.

## 2.4    Empirical Linkages Between Government Expenditure and Economic Growth

The subsequent sections present research on the correlation between government expenditure and economic development. Nevertheless, the aforementioned research failed to account for the potential impact of incorporating institutional quality into the analysis of the relationship between expenditure and growth, leading to outcomes that lack credibility.

The study conducted by Olayungbo and Olayemi (2018) explores the interconnections among non-oil revenues, government expenditures, and economic growth in Nigeria spanning from 1981 to 2015. The study encompasses the temporal span from 1981 to 2015. Following the identification of the enduring association between the variables, an evaluation of the error correction model was conducted. The impact of government spending on economic growth was found to be unfavourable in both the short and long term, while non-oil revenue was found to have a positive effect on economic growth.

Taiwo and Abayomi (2011) conducted a study that is similar to the present one, utilising the Ordinary Least Squares (OLS) method to examine the relationship between categorical government spending and the growth of Nigeria's economy. The present inquiry employs a combination of Ordinary Least Squares (OLS) approach and time series data in its research methodology. The research indicates that increased government expenditure has a positive impact on the growth of the Nigerian economy.

Facchini and Melki (2013) have presented findings that are consistent with the use of cointegration methods and data spanning from 1896 to 2008. The results indicate a correlation between the Gross Domestic Product (GDP) of France and the magnitude of its governmental apparatus over an extended duration. Bojanic (2013) employs the Generalised Method of Moments (GMM) in Bolivia, a technique that guarantees the ability to generate dependable and precise estimations (Bivand & Piras, 2015; Han & Phillips, 2010), while also addressing the issue of endogeneity (Bivand & Piras, 2015; Han & Phillips, 2010). The sources cited in the text are Chen et al. (2014) and Gopalan & Rajan (2016). The available evidence indicates that augmenting the government's military expenditures in Bolivia can lead to a swifter pace of economic growth.

Chen, Lee, and Chiu (2014) conducted a study using a dynamic panel to examine the correlation between defence spending and economic growth. The study covers a total of 137 nations and employs a two-step generalised estimating equation (GMM) methodology, which improves the capacity to generate precise estimations (Siddiqui & Ahmed 2013).

Furthermore, Chen and colleagues (2014) have classified nations into four sub-categories according to their income status, namely the lower-income group, middle-lower income group, middle-higher income group, and higher-income group. By adopting this approach, researchers can circumvent the study of nations that lack comparability as a unified entity. Diverse outcomes are documented based on the level of income. According to the study conducted by Kimaro et al. in 2017, there exists a positive correlation between income level and government spending in low-income Sub-Saharan African nations. Obialor (2017) conducted a study which found

that expenditures allocated towards healthcare and education have a noteworthy and favourable impact on the growth of Nigeria's output. Kimani and Maingi (2021) conducted a study which found that an increase in government spending on infrastructure, investments, economic affairs, health care, and defence has a positive impact on income. The research revealed an inverse relationship between income levels and debt service costs.

## 3.0    Material and Method

This section is dedicated to discussing the research methodology that was used for the study. More specifically, this section discusses the model specification, variable measurement, and, finally, the estimation techniques employed for the data analysis. The stationarity properties of the variables were analysed, and the results of the stationarity analysis were employed to determine which estimation method should be used to calculate the error adjustment, short-run relationship, and long-run relationship.

### *3.1    Variable Description*
*Dependent Variable*

Economic growth refers to the expansion in the output of goods and services within a specified timeframe. The concept can be conveyed through both actual and symbolic representations. When an item is expressed in real terms, it takes into account the impact of inflation. For the sake of achieving maximum accuracy, it is imperative that the measurement remains unadjusted for inflation. There are multiple methods for quantifying economic growth. Gross Domestic Product (GDP) is a commonly utilised metric by economists to gauge economic growth. However, there are some who prefer to employ human development as an alternative measure.

The study will employ the GDP per capita as the standard for gauging economic expansion. The Gross Domestic Product (GDP) refers to the total market value of all final goods and services that are produced within a given country's borders during a specified period of time. The aforementioned metric is quantified as a proportion of the entire economic output of a country, commonly referred to as Gross Domestic Product (GDP). The Gross Domestic Product (GDP) serves the purpose of measuring the magnitude of an economy, its growth rate, and presenting a momentary representation of the economic state of a nation.

### *Independent Variables*

*Government Expenditure*: This is the amount that is paid out by the government, and it takes into account all of the organization's recurring costs that are connected to the purchase of goods and services (including compensation of employees). Also accounted for are the vast majority of the

costs associated with national defence and security; however, the expenditures made by the government on military activities that are not considered to be part of capital formation are not accounted for. Data are in constant 2015 US$.

*Capital Stock:* The data provided encompasses estimations for four distinct categories of assets, namely structures (encompassing both residential and non-residential structures), machinery (inclusive of computers, communication equipment, and other machinery), transportation equipment, and other assets. Structures encompass not only residential and non-residential buildings, but also software, other intellectual property products, and cultivated assets.

The file denoted as the capital detail file encompasses a diverse range of topics, including but not limited to the current-cost net capital stock (Kc), capital stock deflator (Kp), capital investment at current national prices (represented by the Ic variables), and capital consumption at current prices. The document delves into additional subject matters, such as capital investment at present national prices, which is denoted by the Ip variables. Each of these subjects is further subdivided into their corresponding categories (Dc). The subsequent elucidation pertains to the correlation: The formula for investment in an asset at constant national prices is expressed as I at=Ic/Ip.

The variable K represents the capital stock of a given asset, which is measured at constant national prices and is determined by the equation 1 - at^2. The expression presented is a mathematical formula that involves the variables K and I, as well as the variable t, which represents time. Specifically, the formula calculates the value of a variable at a given time, where the value is determined by multiplying the value of the variable at the previous time point (t-1) by the constant K and adding the product of the current value of the variable and the constant I.

The current value of the net capital stock. The equilibrium constant of a reaction at constant temperature, Kc, can be expressed as the product of the equilibrium constant at standard conditions, Kp, and the reaction quotient, Qc. The computation for asset depreciation is expressed as at=Dc/Kc. Theoretically, there exists a positive correlation between the Gross Domestic Product per capita (GDPPC) and the capital stock, which is derived from the Penn World Table 9.0 (PWT 9.0).

*Institutional Quality*: The institutions in Rodrik's (2000) collection were used to compile an index of institution quality. The set of institutions includes institutions for social insurance, property rights, regulation, macroeconomic stabilisation, and institutions made with principal component analysis (PCA).

## 3.2    Source of Data

The data set covers the time period from 1985 to 2021 and is composed of observations pertaining to 32 countries. The World Development Indicators (WDI), the Risk Guide and the World Governance Indicators (WGI), and the Penn World Table were the sources that were used to compile the data (PWT).

**Table 1.** Source of Data

| Symbol | Variable Name | Source | Description |
|--------|---------------|--------|-------------|
| GDPPC | Per Capita GDP | WDI | GDP divided by the midyear population. |
| INS | Institutional Quality | ICRG/AUTHOR | A measure of institutional quality is created by combining the five variables of institutional quality and democracy. This is the PCA-derived created measure of financial development. |
| GVTEXP | Government Expenditure | WDI | All current government expenditures expressed in constant 2015 US dollars. |
| CS | Capital Stock | PWT 9.0 | The relative price of the capital stock is derived from asset-specific investment data |
| TOP | Trade Openness | WDI | Export-Import difference |

Source: Author Own Compilation (2023).

## 3.3    Econometric approach

The present investigation employed the Panel Unit Root Econometric Test. The IM, Pesaran (2005), and Shin (IPS) W-stat (2003) tests were specifically employed. The utilisation of estimation strategies such as Pooled Mean Group and Dynamic Fixed Effect (DFE) was based on panel cointegration.

### 3.3.1   Panel Unit Root Test

It is imperative to ensure that all variables exhibit stationarity prior to proceeding with the appropriate analytical techniques for data analysis. This task ought to be executed irrespective of whether the variables are of identical magnitude or of a heterogeneous magnitude. To achieve this objective, we employed the IPS W-stat (2003) test, which is a first-generation panel unit root test, in combination with the second-generation panel unit root test proposed by Pesaran (2005). Both of these experiments were conducted to ascertain the statistical significance of the panel unit root of Im, Pesaran, and Shin (IPS) W-stat (2003) test. Through the employment

of these examinations, we shall have the capacity to tackle the issues of cross-sectional interdependence and heteroscedasticity.

The scholarly literature has indicated that cross-sectional dependence can emerge due to various factors such as unobserved commonalities, externalities, regional and macroeconomic connections, and residual interdependence that has not been accounted for. This observation has been made. This is a matter that has been brought to the attention of all individuals involved. Recent advancements in the field of macroeconomics have led to the emergence of novel panel unit root tests that aim to explore the issue of dependence and correlation, given the widespread prevalence of macroeconomic linkages and dynamics. Recent advancements have resulted in the inception of these assessments. The tests in question are denoted by their formal nomenclature, namely, the second-generation panel unit root tests. The present article considers the Cross-Sectional Augmented IPS (CIPS) as a prominent second-generation test, which was introduced by Pesaran (2005). In his work, Pesaran (2005) incorporates the following factors to construct a formula for a panel unit root test that accommodates cross-sectional interdependence: The ith cross-sectional data in the panel was subjected to the Cross-Sectional Augmented Dickey-Fuller (CADF) regression, and the Ordinary Least Squares (OLS) method was employed to estimate the results. The objective of this endeavour was to enable the authors to devise a panel unit root test that incorporates cross-sectional dependence.

### 3.3.2   Pooled Mean Group (PMG) Estimator

The salient feature of the PMG model is its ability to accommodate cross-country heterogeneity in short-run coefficients, including intercepts, the rate of convergence to long-run equilibrium values, and error variances. However, it mandates homogeneity in long-run slope coefficients across all countries. The most distinctive feature of the PMG is hereby identified. The aforementioned differentiation between the two types of coefficients is of utmost significance. This approach proves to be particularly advantageous in cases where there exist grounds to expect that the association between the variables in the steady-state equilibrium will remain consistent across all nations or a specific subset of nations. It is conceivable to anticipate that the association between the variables in the state of long-term equilibrium will remain constant. The short-term adjustment can be customised to the specific requirements of a given nation, considering factors such as its vulnerability to financial crises and external shocks, as well as its stabilisation policies and monetary policy, which can have a significant impact on outcomes.

However, for the methodology to be deemed valid, consistent, and efficacious, several prerequisites must be fulfilled. In order to establish a long-term association between the variables of interest, it is necessary for the error-correction term's coefficient to possess a negative value that is equal to or greater than -2. Secondly, for the sake of consistency in the ARDL model, it is imperative to assume that the residual resulting from the error-correction model is serially uncorrelated, and that the variables employed in elucidating the data can be regarded as exogenous. The fulfilment of these requirements can be achieved through the incorporation of ARDL (p,q) lags into the error-correction model for both the dependent (p) and independent variables (q).

Furthermore, the relative magnitude of the dimensions of T and N holds significant significance as it governs the feasibility of employing the dynamic panel methodology. This technique aids in mitigating partiality in the mean estimators and resolves the issue of heterogeneity when both T and N possess a substantial populace. According to Eberhardt and Teal's (2010) argument, a crucial element in comprehending the process of growth is the manner in which heterogeneity is addressed. Failure to meet these conditions may lead to inconsistent estimation of PMG.

### 3.3.3   *Dynamic Fixed Effects (DFE) Model*

The PMG estimator and the Dynamic Fixed Effects estimator (DFE) exhibit a high degree of comparability. Similar to the PMG estimator, the DFE imposes constraints on the slope coefficient and error variances to ensure that these parameters are comparable across countries over a prolonged period. The validity of the DFE model is contingent upon the satisfaction of an extra constraint. This particular restriction requires that the coefficient of speed of adjustment and the coefficient of short-term effect must be equivalent.

Conversely, the model integrates intercepts that are specific to individual countries. The DFE platform offers users the capability to cluster their data, a process that enables the estimation of intra-group correlation and standard error (Blackburne and Frank, 2007). Baltagi, Gri, and Xiong (2000) have noted that the model is vulnerable to a simultaneous equation bias if the sample size is small. The reason for this phenomenon can be attributed to the endogeneity that is present between the error term and the lagged dependent variable.

The presence of a lagged dependent variable in the model is responsible for this bias. The efficacy of the PMG estimator is contingent upon the presence of persistent connections among the variables utilised in estimations, alongside a suitably augmented lag order of the dynamic specification of the model, to ensure that the regressors are weakly exogenous and the residual is serially uncorrelated. The rationale behind

utilising the PMG estimator lies in its ability to estimate the likelihood of a specific variable remaining constant throughout a given period (Karaduman, 2015). Conversely, the DFE maintains consistent slope parameter values across both the short and long term. The autoregressive distributed lag model with a lag order of (p,q,q,q) is specified as the DFE.

$$\Delta lnGDPPC_{it} = \sum_{j=1}^{p} b_{ij}lnGDPPC_{it-j} + \sum_{j=0}^{q} d_{ij}lnGOVTEXP_{it-j} + \sum_{j=0}^{q} f_{ij}lnINS_{it-j} + \sum_{j=0}^{q} h_{ij}lnCS_{it-j} + \sum_{j=0}^{q} k_{ij}lnTOP_{it-j} + v_i + e_{1i}$$
(1)

The equation (1) was then transformed into a panel ECM below:

$$\Delta lnGDPPC_{it} = \psi_i( lnGDPPC_{it-1} - d_i^{\psi}lnGOVTEXP_{it} - f_i^{\psi}lnINS_{it} - h_i^{\psi}lnCS_{it} - k_i^{\psi}lnCS_{it})$$
$$+ \sum_{j=1}^{p-1} b_i^{*}\Delta lnGDPPC_{it-1} + \sum_{j=1}^{p-1} d_i^{*}\Delta lnGOVTEXP_{it-1} + \sum_{j=1}^{p-1} f_i^{*}\Delta lnINS_{it-1} + \sum_{j=1}^{p-1} h_i^{*}\Delta lnCS_{it-1} + \sum_{j=1}^{p-1} k_i^{*}\Delta lnTOP_{it-1} + v_i + e_{1i}$$
(2)

Where; $\psi_i = \sum_{j=1}^{p} b_i^{*} - 1$, $d_i^{\psi} = - \sum_{j=0}^{p} \frac{d_{ij}}{\psi_i}$, $f_i^{\psi} = -\sum_{j=0}^{p} \frac{f_{ij}}{\psi_i}$, $h_i^{\psi} = -\sum_{j=0}^{p} \frac{h_{ij}}{\psi_i}$, $k_i^{\psi} = -\sum_{j=0}^{p} \frac{k_{ij}}{\psi_i}$ and $b_{im}^{*} = -\sum_{m=j+1}^{p} b_{im}$, $d_{im}^{*} = -\sum_{m=j+1}^{p} d_{im}$, $f_{im}^{*} = -\sum_{m=j+1}^{p} f_{im}$, $k_{im}^{*} = -\sum_{m=j+1}^{p} k_{im}$.

The coefficient $\psi_i$ denotes the error correction component, which is expected to possess negative statistical significance and exhibit a smaller magnitude in instances where a cointegration metric is present, indicating a faster rate of convergence towards the long-term equilibrium. The coefficients $d_i^{\psi}, f_i^{\psi}$ measure the long-run impacts of the independent variables on growth while the $d_{im}^{*}, f_{im}^{*}$ measure the short-run impacts of the financial development, institutional quality and capital on growth per capita.

## 4.0     Results
This section presents the outcomes of the investigation, including the correlation analysis, Johansen cointegration, and the vector error correction term. The study variables are accompanied by descriptive statistics.

### 4.1     *Descriptive Statistics*
Table 2 displays the description of the study variables. The Log(GDPPC) range observed in low-income countries falls between 5.12 and 7.76, with an average value of 6.33. The Log(GDPPC) mean value for middle-income countries falls within the range of 6.25 to 9.15, with an average of 7.64. On average, countries with low and middle income have government spending logs of 20.54 and 21.95, respectively. This implies that

in contrast to nations with lower income, nations with middle-level income exhibit greater expenditures and possess a higher Gross Domestic Product per capita. The mean institutional quality of low-income nations was 1.58, with a narrow standard deviation of 0.19. Middle-income countries exhibited higher levels of capital, with values ranging from 0.94 to 1.87. The mean value of trade openness in low-income countries is 20.15, while in middle-income countries it is 21.95.

**Table 2.** Descriptive of Study Variables

| Income | Variables | Obs | Mean | Std | Min | Max |
|---|---|---|---|---|---|---|
| Low Income | *lnCS* | 629 | 9.22 | 0.82 | 7.11 | 11.50 |
| | *lnINS* | 629 | 1.58 | 0.19 | 0.72 | 1.88 |
| | *lnTOP* | 556 | 20.15 | 1.43 | 15.48 | 23.77 |
| | *lnGDPPC* | 629 | 6.33 | 0.46 | 5.12 | 7.76 |
| | *lnGVTEXP* | 556 | 20.54 | 1.36 | 17.39 | 23.71 |
| Middle Income | *lnCS* | 518 | 10.39 | 0.95 | 8.61 | 12.73 |
| | *lnINS* | 518 | 1.62 | 0.16 | 0.94 | 1.87 |
| | *lnTOP* | 518 | 21.34 | 1.52 | 11.98 | 25.55 |
| | *lnGDPPC* | 518 | 7.64 | 0.69 | 6.25 | 9.15 |
| | *lnGVTEXP* | 518 | 21.95 | 1.09 | 18.53 | 24.98 |
| All | *lnCS* | 1147 | 9.75 | 1.05 | 7.11 | 12.73 |
| | *lnINS* | 1147 | 1.60 | 0.18 | 0.72 | 1.88 |
| | *lnTOP* | 1074 | 20.73 | 1.59 | 11.98 | 25.55 |
| | *lnGDPPC* | 1147 | 6.92 | 0.87 | 5.12 | 9.15 |
| | *lnGVTEXP* | 1074 | 21.22 | 1.42 | 17.39 | 24.98 |

## 4.2    *Principal component analysis for Institutional Quality Index*

The index of institutional quality was derived by Rodrick through the utilisation of principal component analysis on five institutional variables (200). The aforementioned are the five categories of institutions, namely Institutions for Property Rights, Institutions for Regulation, Institutions for Macroeconomic Stability, Institutions for Social Insurance, and Institutions for Conflict Management. According to Table 3, a factor exhibited an eigenvalue exceeding one and a proportion surpassing 0.5. The institutional variables can be classified into a single factor, which explained 55.3% of the total variance.

**Table 3.** Principal Component Analysis for Institutional Quality Index

| Component | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| Comp1 | 3.2232 | 2.2592 | 0.5530 | 0.5530 |
| Comp2 | 0.9640 | 0.1971 | 0.1225 | 0.6755 |
| Comp3 | 0.7669 | 0.2309 | 0.1007 | 0.7762 |
| Comp4 | 0.5359 | 0.1211 | 0.0878 | 0.8640 |

| | | | | |
|---|---|---|---|---|
| Comp5 | 0.4148 | 0.3196 | 0.0693 | 0.9333 |
| Comp6 | 0.0952 | | 0.0667 | 1 |

### 4.3    *Cross Sectional Dependency*

Gui-Diby (2021) highlights that cross-sectional dependence is a common occurrence in panel regression and emphasises the importance of addressing it to attain desirable results. The cross-sectional aspect of the study employed various tests, namely the Breusch-Pagan (1980) LM test, the Pesaran (2004) scaled LM test, the Baltagi, Feng, and Kao (2012) bias-corrected scaled LM test, and the Pesaran (2004) CD test. The results are elaborated in Table 4, presented subsequently. The results of all four tests indicate the presence of cross-sectional dependency in the panel data.

**Table 4.** Cross-sectional Dependency

| Variables | Breusch-Pagan LM | Pesaran scaled LM | Bias-corrected scaled LM | Pesaran CD |
|---|---|---|---|---|
| LOG_GDPPC | 6010.914*** | 204.8671*** | 204.4671*** | 39.0620*** |
| LOG_CAPITAL | 5584.482*** | 189.3579*** | 188.9579*** | 47.3117*** |
| LOG_FDI | 6278.016*** | 214.5815*** | 214.1815*** | -2.00347** |
| LOG_INST | 2101.451*** | 62.6813*** | 62.2813*** | 32.17102*** |
| LOG_IQLEG | 1955.057*** | 57.35702*** | 56.95702*** | 23.45988*** |

*** represent significant at 1%.

### Unit Root Tests for Lower Income Countries

Table 4 displays the results of the panel unit root tests. According to the findings, economic growth and financial development are integrated at order one I(1), whereas capital and institutional quality are I(0) variables. Theoretically, panel cointegration estimation using pooled mean group (PMG) and dynamic fixed effect estimators is possible when the variables have a mix of I(1) and I(0) properties (DFE). Table 5 shows the results of the panel unit root.

**Table 5.** Panel Unit Root Test Without Breaks

| | Serries | All | | Low Income | | Middle Income | |
|---|---|---|---|---|---|---|---|
| | Serries | Pesaran (2005) | Im, Pesaran and Shin W-stat | Pesaran (2005) | Im, Pesaran and Shin W-stat | Pesaran (2005) | Im, Pesaran and Shin W-stat |
| *lnGDDPC* | Level | -0.245 | 2.934 | -1.199 | 1.531 | 0.985 | 2.679 |
| | 1st Diff. | -9.198*** | -12.035*** | -6.786*** | -10.330*** | -6.273*** | -6.526*** |
| *lnCS* | Level | 1.774 | 4.700 | -1.652** | 1.293 | -3.503*** | -0.986 |
| | 1st Diff. | -7.934*** | -13.376*** | -3.860*** | -5.129*** | -3.198*** | -5.760*** |
| *lnins* | Level | -5.794*** | -3.983** | -4.057*** | -2.760*** | -4.187*** | -2.886*** |
| | 1st Diff. | -20.446 | -18.304*** | -16.066*** | -14.028*** | -12.688*** | -11.779*** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *lnGEXP* | Level | 1.774 | 4.700 | 2.876 | 4.106 | 0.275 | 2.515 |
| | 1st Diff. | -7.934*** | -13.376*** | -5.929*** | -9.712*** | -5.286*** | -9.199*** |
| *lnTOP* | Level | 2.487 | 0.584 | 2.490 | 2.325 | 0.756 | -1.566* |
| | 1st Diff. | -14.250*** | -21.157*** | -12.220*** | -14.092*** | -7.763*** | -15.864*** |

*** represents unit root significant at 1%, ** represents unit root significant at 5%.

## 5.4 Estimates of Long-run, Short-run Coefficients and Error Correction Term

Table 6 displays the results of the PMG and DFE techniques for the impacts of government spending on economic growth in the short and long term, while taking into account the influence of institutional quality. The error correction term obtained from the MG, PMG, and DFE methods are also presented in Table 6.

**Table 6.** Estimates of Long-run, Short-run Coefficients and Error Correction Term

| VARIABLES | All | | Middle Income | | Lower Income | |
|---|---|---|---|---|---|---|
| | PMG | DFE | PMG | DFE | PMG | DFE |
| **Long-Run Coefficients** | | | | | | |
| *lnGEXP* | 0.0909 | 0.0416 | 0.1915*** | -0.0557 | 0.1928*** | 0.1357 |
| | (0.0761) | (0.1005) | (0.0417) | (0.1992) | (0.0667) | (0.0861) |
| *lnCS* | 0.0410 | 0.1022 | 0.2865*** | 0.2189 | 0.0991 | -0.0628 |
| | (0.0410) | (0.1164) | (0.0516) | (0.2083) | (0.2453) | (0.1792) |
| *lnins* | 3.4602*** | 1.5096*** | 0.9412*** | 1.2902** | 3.1873*** | 1.8854*** |
| | (0.5677) | (0.4435) | (0.1116) | (0.5418) | (0.4906) | (0.5929) |
| *lnTOP* | 0.0799*** | 0.1023** | -0.0420 | 0.1308* | 0.0759*** | 0.0815* |
| | (0.0247) | (0.0456) | (0.0299) | (0.0676) | (0.0247) | (0.0457) |
| **Short run** | | | | | | |
| Error correction Term (ECT) | -0.0313*** | -0.0604*** | -0.0752*** | -0.0596*** | -0.0397** | -0.0648*** |
| | (0.0080) | (0.0169) | (0.0245) | (0.0225) | (0.1671) | (0.0233) |
| $\Delta lnGEXP$ | 0.0828*** | 0.0263*** | 0.0721*** | 0.0270** | 0.0839*** | 0.0259*** |
| | (0.0172) | (0.0083) | (0.0236) | (0.0136) | (0.0297) | (0.0094) |
| $\Delta lnCS$ | 0.0210 | 0.0065 | 0.0539 | -0.0142 | 0.0420 | 0.0235 |
| | (0.0279) | (0.0203) | (0.0395) | (0.0283) | (0.5427) | (0.0270) |
| $\Delta lnins$ | -0.0215 | 0.0008 | 0.0153 | 0.0157 | -0.04124 | -0.0328 |
| | (0.04877) | (0.0333) | (0.0264) | (0.0447) | (0.0887) | (0.0479) |
| $\Delta lnTOP$ | 0.0058 | -0.0036** | 0.0199 | -0.0040 | -0.0035 | -0.0034 |
| | (0.0086) | (0.0018) | (0.0167) | (0.0043) | (0.0040) | (0.0022) |
| Constant | -0.0798*** | 0.0396 | -0.0767*** | 0.0555 | -0.1441*** | 0.0379 |
| | (0.01717) | (0.0704) | (0.0273) | (0.0957) | (0.0522) | (0.0759) |

| Hausman | 17.32** | 1.36 | 0.98 | |
|---|---|---|---|---|
| No. of Country | 29 | 15 | | 14 |
| Observations | 1044 | 540 | | 504 |

Note: *** Significance at 1% level; *** Significance at 1% level

According to Table 5, the adjustment coefficients for both methods (PMG and DFE), regardless of the country's type of economy, are between 0 and -1 and are significant at 1%. For the combined data, the error correction terms from PMG and DFE are -0.0313 and -0.0604, respectively. This means that, according to the PMG estimate, only 3.13% of the system's disequilibrium is corrected within a year.

The present study utilised the Hausman h-test to assess the relative efficacy and coherence of the two methods. The results indicate that the computed Hausman statistic is 17.32 and follows a $\chi2(1)$ distribution. This section culminates in the rejection of the PMG estimator, which, despite being the most efficient under the null hypothesis, fails to meet the necessary criteria. Consequently, the Dynamic Fixed Effect model is the favoured option. According to the DFE model applied to combined data, a noteworthy correlation exists between government expenditure and economic growth in the short term. However, the aforementioned correlation between government expenditure and economic growth is deemed insignificant in the long term. Over time, it was found that the calibre of institutions and degree of trade openness significantly aided in fostering economic development.

Subsequently, we proceed to recalibrate the models for low-income and middle-income countries situated in sub-Saharan Africa, with the aim of ascertaining the degree to which the aforementioned discovery fluctuates with respect to income bracket. Table 5 displays the outcomes, while the Hausman statistic attains a value of 1.36, signifying that the PMG estimator, which is effective under the null hypothesis, is not refuted. Consequently, the PMG model was deemed necessary for nations with low-income status. The findings suggest a noteworthy correlation between public expenditure and economic expansion in both the immediate and extended periods. The aforementioned outcome is in line with Kouassi's (2018) claim that government expenditure plays a crucial role in fostering economic growth in developing countries. According to their explanation, government spending generates employment opportunities for individuals who lack the means to establish their own industries. The allocation of funds by the government generates job prospects, thereby fostering economic growth.

The findings of the evaluation of the approximations for middle-income nations were analogous to those of the low-income nations. According to the results of the Hausman test, the PMG model is the preferred

choice. According to the PMG's findings, the influence of government expenditure on economic growth was noteworthy, encompassing both immediate and prolonged time frames. The results corroborated the study conducted by Olaoye, Eluwole, Ayesha, and Afolabi (2020) which indicated a favourable relationship between government expenditure and economic advancement in the Economic Community of West African States (ECOWAS) during the duration of the research.

The variable of institutional quality was found to have a significant impact on economic growth in all models. Over the course of time, irrespective of the state of the economy, the quality of institutions assumes a pivotal role in the advancement of the economy. The aforementioned outcome substantiates the claim made by Olaoye and Aderajo (2020) that the efficient operation of an institution can lead to favourable consequences in various governmental endeavours. Agostino, Dunne, and Pieroni (2016) posit that economic growth is only impeded by government spending when an institution is weak.

**Conclusion**

There is a mounting apprehension regarding the influence of governmental expenditures on the economic development of Sub-Saharan Africa. The present study delved into the extent to which the existence of institutional attributes can augment the association between government expenditure and economic expansion, surpassing a mere scrutiny of immediate impacts. The study's findings suggest that government spending can have a positive impact on both short- and long-term economic growth in low- and middle-income countries, provided that institutional quality is present.

The utilisation of an estimable form of the model and its application to 32 countries provides confirmation of the theoretical proposition that economic growth is enhanced by government investment spending in the presence of institutional quality. The impact of institutional quality on the correlation between government spending and economic growth necessitates the inclusion of this variable in any analysis. Failure to account for institutional quality may result in inaccurate estimations of the relationship between government spending and economic growth (Government spending and economic growth).

In light of the potential implications of these findings, it is suggested that institutions should possess a strong and autonomous structure, devoid of any unethical conduct, in order to enable the populace to fully capitalise on the government's investments in economic expansion. It is imperative to optimise the utilisation of public funds in constructing infrastructure that is both self-sustaining and resilient.

# References:

1. Ademuyiwa, J. A., & Adetunji, A. A. (2019). Impact of Some Economic Variables on the Real    Gross Domestic Product of Nigeria. Budapest International Research and Critics    Institute (BIRCI-Journal): Humanities and Social Sciences, 2(4), 12-19.

2. Aluko, O. A., & Ibrahim, M. (2020). Institutions and the financial development–economic    growth    nexus    in    sub-Saharan Africa. Economic Notes, 49(3), e12163.

3. Asamoah, L. A., Mensah, E. K., & Bondzie, E. A. (2019). Trade openness, FDI and economic growth  in  sub-Saharan  Africa:  do institutions matter?. Transnational Corporations    Review, 11(1), 65-79.

4. Bhattacharya, A., Oppenheim, J., & Stern, N. (2015). Driving sustainable development through    better    infrastructure:    Key elements of a transformation program. Brookings Global    Working Paper Series.

5. Bivand, R., & Piras, G. (2015). Comparing implementations of estimation methods for spatial        econometrics. Journal        of Statistical Software, 63, 1-36.

6. Facchini, F. & Melki, M., 2013. Efficient government size: France in the 20th century. European Journal of Political Economy, 31, pp.1–14.

7. Bojanic, A.N., 2013. The Composition of Government Expenditures and Economic Growth inBolivia. Latin American Journal of Economics, 50(1), pp.83–105.

8. Cakerri, L., Muharremi, O., & Madani, F. (2020). An empirical study in Albania of foreign direct    investments    and    economic    growth relationship. International Journal of Economics and        Financial Issues, 10(2), 193.

9. Chen, P.F., Lee, C.C. & Chiu, Y. Bin, 2014. The nexus between defense expenditure and economic growth: New global evidence. Economic Modelling, 36, pp.474–483.

10. Chen, P.F., Lee, C.C. & Chiu, Y. Bin, 2014. The nexus between defense expenditure and economic growth: New global evidence. Economic Modelling, 36, pp.474–483.

11. Chuhan-Pole, P., Dabalen, A., Kotsadam, A., Sanoh, A., Benshaul-Tolonen, A., & Tolonen, A.  K. (2015). The  local  socioeconomic effects of gold mining: evidence from Ghana. World        Bank Policy Research Working Paper, (7250).

12. Collado, D., Cantillon, B., Van den Bosch, K., Goedemé, T., & Vandelannoote, D. (2016). The        end of cheap talk about poverty

reduction: the cost of closing the poverty gap while maintaining work incentives.

13. d'Agostino, G., Dunne, J. P., & Pieroni, L. (2016). Government spending, corruption and economic growth. World Development, 84, 190-205.

14. Dauns, M., Ebert, W., & Schuknecht, L. (2015). Paying for the Future: Working Systems for Pensions and Healthcare. London: Politeia.

15. Dinh Thanh, S., & Canh, N. P. (2019). Dynamics between government spending and economic growth in China: an analysis of productivity growth. Journal of Chinese Economic and Business Studies, 17(2), 189-212.

16. Fournier, J. M. (2016). The positive effect of public investment on potential growth. OECD Economics Department Working Papers, No. 1347, OECD Publishing, Paris, https://doi.org/10.1787/15e400d4-en.

17. Gopalan, S. & Rajan, R.S., (2016). Has Foreign Aid Been Effective in the Water Supply and Sanitation Sector? Evidence from Panel Data. World Development, 85, pp.84–104.

18. Gui-Diby, S. L. (2021). Public Financial Management and Fiscal Performance: Evidence from Panel Data Analyses. Applied Economics Letters, 1-7.

19. Gui-Diby, S. L., & Renard, M. F. (2015). Foreign direct investment inflows and the industrialization of African countries. World Development, 74, 43-57.

20. Han, C. & Phillips, P.C.B. (2010). GMM Estimation for Dynamic Panels with Fixed Effects and Strong Instruments at Unity. Econometric Theory, pp.119–151.

21. Im, K.S, Pesaran, M.H., Shin, Y.C., (2003). Testing for unit roots in heterogeneous panels. Journal of Econometrics 115, 53–74.

22. Ismaila, M., & Imoughele, L. E. (2015). Macroeconomic determinants of economic growth in Nigeria: A cointegration approach. International Journal of Academic Research in Economics and Management Sciences, 4(1), 34-46.

23. Kimani, G. W., & Maingi, J. (2021). Effect of Various Categories of Government Expenditure on Economic Growth in Kenya. International Journal of Current Aspects in Finance, Banking and Accounting, 3(1), 21-40.

24. Kimaro, E. L., Keong, C. C., & Sea, L. L. (2017). Government expenditure, efficiency and economic growth: a panel analysis of Sub Saharan African low income countries. African Journal of Economic Review, 5(2), 34-54.

25.  Kouassi. K., B., (2018). Public Spending and Economic Growth in Developing Countries: a Synthesis. Financial Markets, Institutions and Risks, 2(2), 22-30. DOI: 10.21272/fmir.2(2).22-30.2018.

26.  Liu, Y., Li, J., & Yang, Y. (2018). Strategic adjustment of land use policy under the economic transformation. Land use policy, 74, 5-14.

27.  Najmuddin, Z. (2020). The Impact of Government Expenditure on Banten Economic Growth in 2010–2017. Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning, 4(1), 54-64.

28.  North, D. C. (1991). Institutions. Journal of Economic Perspectives, 5(1), pp.97-112. https://pubs.aeaweb.org/doi/pdf/10.1257/jep.5.1.97

29.  North, D. C. (1993). Institutions and credible commitment. Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft, 11-23.http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/3711/9412002.pdf?...1

30.  Nurudeen, A., & Usman, A. (2010). Government Expenditure and Economic Growth in Nigeria, 1970-2008: A Disaggregated Analysis. Business and Economics Journal, 1–11.

31.  Obialor, M. C. (2017). Effect of government human capital investment on economic growth in Sub-Saharan Africa: Evidence from Nigeria, South Africa and Ghana (1980-2013). International Journal of Asian Social Science, 7(4), 328-339.

32.  Olaoye, O. O., Eluwole, O. O., Ayesha, A., & Afolabi, O. O. (2020). Government spending and economic growth in ECOWAS: The Journal of Economic Asymmetries, 22, e00180.

33.  Olaoye, O., & Aderajo, O. (2020). Institutions and economic growth in ECOWAS: an investigation into the hierarchy of institution hypothesis (HIH). International Journal of Social Economics.

34.  Olayungbo, D. O., & Olayemi, O. F. (2018). Dynamic relationships among non-oil revenue, government spending and economic growth in an oil producing country: Evidence from Nigeria. Future Business Journal, 4(2), 246-260.

35.  Onoja, J. E. (2015). A dynamic analysis of the effects of changes in government spending on output in Nigeria. An International Journal of Arts and Humanities, 4(1), 140-147.

36.  Ostrom, V., & Ostrom, E. (2019). Public goods and public choices. In Alternatives for delivering public services (pp. 7-49). Routledge.

37. Pesaran, H., Smith, R.,(1995). Estimating long-run relationships from dynamic heterogeneous       panels. Journal of Econometrics 68, 79–113.
38. Pesaran, M.H. (2005). A simple panel unit root test in the presence of cross-section dependence.       Cambridge University Working Paper
39. Popescu, C. C. (2021). Government Spending and Economic Growth: A Cointegration Analysis       on       Romania. Sustainability, 13(12), 6575.
40. Reinhart, C. M., & Sbrancia, M. B. (2015). The liquidation of government debt. Economic   Policy, 30(82), 291-333.
41. Rodrik, D. (2000). Institutions for High-Quality Growth:  What They Are and How to Acquire Them, NBER Working Paper Series, Working Paper 7540,
42. Ruiz, J. L. (2018). Financial development, institutional investors, and economic       growth. International Review of Economics & Finance, 54, 218-224.
43. Serageldin, I., & Grootaert, C. (2017). Defining social capital: an integrating view 1.       In Evaluation  & Development (pp. 201-217). Routledge.
44. Shen, W., Yang, S. C. S., & Zanna, L. F. (2018). Government spending effects in low-income       countries. Journal       of Development Economics, 133, 201-219.
45. Shobe, M. A., Christy, K., Givens, A., Murphy-Erby, Y., & Rand, A. (2017). Savings program       participation   and   outcomes   for Hispanics. Journal of Ethnic & Cultural Diversity in       Social Work, 26(3), 185-203.
46. Smets, F. (2018). Financial stability and monetary policy: How closely interlinked?. 35th issue       (June 2014) of the International Journal of Central Banking.
47. Taiwo, M. & Abayomi, T., (2011). Government Expenditure and Economic Development :Empirical Evidence from Nigeria. European Journal of Business and Management, 3,pp.18–29.
48. Thomson, M., Kentikelenis, A., & Stubbs, T. (2017). Structural adjustment programmes       adversely       affect       vulnerable populations: a systematic-narrative review of their effect on  child and maternal health. Public health reviews, 38(1), 1-18.
49. Usman, O., & Agbede, E. A. (2015). Government expenditure and economic growth in Nigeria: A  cointegration and error correction modeling.
50. World Bank. (2015). GDP Per Capita . World Development Indicators    Retrieved    from    http://data.worldbank.org/indicator /BX.TRF.PWKR.CD.DT .

**Appendix: Sub-Saharan Countries and Their Classifications**

| Low Income Country | Middle Income Country |
| --- | --- |
| Burkina Faso | Angola |
| Central African Republic | Botswana |
| Congo, Dem. Rep. | Cameroon |
| Ethiopia | Congo, Rep. |
| Gambia, The | Cote d'Ivoire |
| Guinea | Gabon |
| Guinea-Bissau | Ghana |
| Madagascar | Kenya |
| Malawi | Namibia |
| Mali | Nigeria |
| Mozambique | Senegal |
| Niger | South Africa |
| Sierra Leone | Tanzania |
| Sudan | Zimbabwe |
| Togo | |
| Uganda | |
| Zambia | |