

Determinants of Government Expenditure In Southwest Nigeria

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DETERMINANTS OF GOVERNMENT EXPENDITURE IN SOUTHWEST NIGERIA

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Abstract

This study examined the determinants of government expenditure in Southwest Nigeria. The study adopted ex-post facto research design and it covered 10 years, spanning from 2010 to 2019. The panel data used was sourced from the CBN statistical bulletin (2019) and the annual budget of each of the sampled states. Panel data estimation techniques were used and based on the most consistent and efficient estimation, it was discovered that internally generated revenue exerts a positive significant effect on both capital and recurrent expenditure to the tune of 1.315 ($p=0.000 < 0.05$) and 0.670 ($p=0.001 < 0.05$) respectively. It was equally discovered that statutory allocation exerts a positive but insignificant effect on both capital and recurrent expenditure for the period covered to the tune of 0.34 ($p=0.236 > 0.05$) 0.389 ($p=0.065 > 0.05$) respectively. Also, it was discovered that domestic debt exerts a negative insignificant effect on capital expenditure to the tune of -0.061 ($p=0.733 > 0.05$). Finally, domestic debt has a positive but insignificant effect on recurrent expenditure to the tune of 0.109 ($p=0.352 > 0.05$). It was established that internally generated revenue, statutory allocation and domestic debt are the determinant factors of public expenditure across all the states in the Southwest region of Nigeria. Thus, it was recommended that available revenue should be judiciously utilized on the pressing needs of the state. While revenue is needed for the functionality of the government, state governments are urged to embrace more capital projects through which additional revenue might be generated.

Keywords: Internally Generated Revenue, Statutory Allocation, Domestic Debt, Capital Expenditure Recurrent Expenditure

Introduction

The significance of government to the development and overall growth of a nation cannot be overstressed. The drastic change of the responsibilities of the government from customary functions that majorly revolve around the protection of lives and property and the maintenance of law and order to direct involvement in economic activities like revenue generation and other distributive engagements like subventions and allocations have expressively stretched the range of governments' activities across many nations. Hence, the government acts as an agent of change and the extent to which this is achieved is well-shrouded in the size of government expenditure.

Government expenditure is the cost incurred to ensure the provision of the needs of society. This underscores that government expenditure is a vital means to achieve an equal society by providing welfare infrastructure and social convenience facilities. From the perspective of Abdulai (2016), public expenditure is the expenses allotted for the satisfaction of public needs. The expenses incurred could be grouped into recurrent and capital expenditures. It is recurrent if the expense occurred intermittently to meet up with the growing needs of the citizens while capital expenditure includes all the government investment, transfer payment and consumption.

At any level (Federal, State or Local Government), the major aim of government is, thus, to successfully drive economic activities through adequate policies on political, economic, legal and social programs. The attainment of these programs through which the living standard of the populace can be improved appeared to have engendered a significant increase in the amount of government expenditure across many nations of the world and particularly in Nigeria where the economy is overwhelmed with structural inflexibilities, dilapidated infrastructures, fragile support services, deteriorating productivity, corruption and insecurities of different kinds.

The magnitude of government expenditure is a function of many factors and this has been greatly debated by scholars across the globe attempting to unravel determinants of public expenditure of various countries. In the opinion of Wagner (1883), an economist, growth in population and economic activities are the major factors deciding the magnitude of government expenditure using the understanding of industrialized welfare states. This assumption gave birth to Wagner's law. Several other studies have debated many factors (democracy, urbanization, corruption, globalization, trade openness and foreign aids among others) that necessitate a reasonable increase in the overall government spending (see Durevall & Henrekson, 2011; Eterovic & Eterovic, 2012; Ofori-Abebrese, 2012; Facchini & Melki, 2013; Magazzino, Giolli, & Mele, 2015; Ukwueze, 2015; Joseph, 2016; Sultan & Mustafa, 2016; Obeng & Sakyi, 2017; Adan, 2019).

The continuous discussion on what determines the size of government expenditure is germane for the development of the economy in terms of the management of the fiscal imbalances and the overall improvement of the economic activities. The debate is more relevant among the federating blocks (State governments) of Nigeria. Factors that informed the size of the government should therefore be accorded a great deal because the state of infrastructural facilities still remains extremely poor with minimal improvements in roads, preponderance of ill-equipped educational and health institutions, high rate of unemployment and below average standard of living (Mohammed & Kanu, 2019). It is suspected that public expenditure has not

contributed to infrastructure development due to low and inconsistent allocation with actual spending.

This gave the impetus for this current study to further examine the subject matter through which State Governments can come up with new policies that might possibly impact the determinants of government expenditure. It is noteworthy to bring to fore that in Nigeria, studies like Okafor and Eiya (2011), Aregbeyen and Akpan (2013), Olusegun (2014), Ukwueze (2015), Adamu and Chandana (2019), Aladejare (2019) used determinants such as trade openness, taxation, oil price, oil revenue, public debt against public expenditure. Some of these factors are included in this study. Interestingly, these studies reported that the aforementioned factors are important determinants of government expenditure in Nigeria. However, findings reported might not be tenable at the State level because of their distinctive features in terms of revenue profile and borrowings.

Consequently, it appeared that no single study, at the disposal of the researcher, has examined the determinants of government expenditure in Southwest Nigeria, that constitutes the geographical location for this study. This may affect policy formulation and budget implementation in terms of public expenditure in the region. This study bridged this gap by examining the determinants of government expenditure in Southwest Nigeria with a specific focus on how internally generated revenue, federal allocation and domestic debt determined the magnitude of government expenditure in terms of both capital and recurrent expenditure.

State governments, Lagos, Ogun, Oyo, Osun, Ondo and Ekiti, in the Southwest region of Nigeria recorded an upsurge in the size of government expenditure for the past few years. It is therefore imperative to know which of these determinants actually informed the increase. This might help the State Government to make up-to-date decisions about financial management. The remaining sections are divided into four. Section 2 that covered the literature review is followed by section 3 that centered on methodology. Thereafter, section 4 covered results and discussion of findings and this will be followed by section 5, where conclusion about the findings of the study is made and necessary recommendations are made accordingly.

2.1 Literature Review

IGR is the main source of income for all semi-official government agencies. Governments at all levels need sufficient revenue to manage the public positions acquired within a certain period and one of the means to generate this revenue is IGR. Nnanseh and Akpan (2015) defined IGR as the funds generated locally by federal, state, or local governments within the jurisdiction of a given government. This underlines that IGR is a locally generated fund used to fund government activities. IGR can be roughly divided into tax and non-tax sources. Taxes are mandatory taxes levied on the income of individuals, property, and businesses. On the other hand, non-tax IGR includes voluntary contributions/payments from certain beneficiaries of regional services.

It is believed that IGR does not bear any public debt/borrowing, interest or repayment burdens such as excessive inflation. IGR helps to stimulate economic growth by increasing trade and economic activity. However, it appeared that state governments in Nigeria don't have the capacity to generate adequate revenue to defray their growing expenses. Hence, this depends heavily on statutory allocation from the federal government. Worryingly, the intermittent decline of the international oil price has consequently affected the amount allocated to state

governments. Adan (2019) asserted that in the absence of funding from the federal government, the state government needs IGR to achieve sustainability.

Additional funds made available by the federal government to the subordinate constituted authorities as a supporting hand towards the effective and efficient running of public offices is known as statutory allocation (Adofu & Abula, 2019). Basically, one of the basic features of Nigeria's system of government is its resource allocation system. Public resources are allocated to each state of the federation. David (2017) posited that allocations from the federal government are very helpful for growth and development at the state level. This allocation could be determined based on some distinguished criteria, such as availability of natural resources in the state, population of the state, management ability of the state, and the necessity for infrastructural development in the state among others (Olaoye & Bankole, 2019). In Nigeria, statutory allocation to states is grounded on the allotment of the federation account in which 56% goes to the federal government, 24% to the state government and 20% to local government.

When the available revenues in terms of IGR and statutory allocation are insufficient, government debt becomes a necessary source of funding public expenditure (Glenda, 2017). Such debt can come from internal and external sources. However, the focus of this study is on domestic debt. Domestic debt is necessary to promote domestic investment and it is equally the means to fill the domestic savings gap, especially in the face of declining public income from domestic sources. Domestic debt includes; monies owed by governments to varied local creditors, securities issued and direct borrowings, accounts payable for goods and services, liabilities under leases among others (Olowolaju, Ajibola & Falayi, 2020). In the opinion of Odo, Igberi and Anoke (2019), domestic debt is described as the debt paid to domestic individuals, organizations, and institutions to ensure the provision of public goods through government expenditures. In essence, the concept of domestic debt covers borrowing instruments designated in local currency raised by the government. It is the amount of money raised by the government in local currency and from its own residents.

It is indisputable that the government provides citizens with a favorable environment so that enterprises can easily develop and their lives and property are protected. As pointed out by Oladokun (2015), if the policy of the government on budget execution can protect lives and property and increase infrastructure development and operational activities, it is believed that this will easily create a good business environment that promotes economic activities, attracts investors, and achieves economic development. This explains the importance of government expenditure.

Public expenditure is the basic responsibility of governments at all levels to ensure the rational use of public resources. Joseph (2016) defined government/public expenditure as the case may be as the government's commitment to voters during the election campaign. In the context of this study, government expenditure is the cost incurred to ensure the provision of the needs of an institution, economy and society. This conforms with the fact that government expenditure is a vital means to achieve an equal society by providing welfare infrastructure and social convenience facilities. The expenses incurred could be grouped into recurrent and capital expenditures.

Recurrent expenditure helps the government to achieve the development of the economy and perform some administrative functions. Ukwueze (2015) defined current expenditures as the expenses occurring repeatedly on a daily basis to meet up with the daily needs of the citizens. For record purposes, the incurred costs for the daily operation of government functions are recorded in an operating account called the income and expenditure account. Recurrent expenditures usually include payment of salaries, wages and pensions, administrative expenses, maintenance costs of official vehicles, electricity and telephone charges, water charges, insurance premiums, etc. This indicates that it is a cyclical expenditure, or expenditure on items that are consumed and only stay within a certain time frame.

Capital expenditure can be thought of as expenditure for starting a project or investment. It is also considered to cover the expenditure of purchasing fixed assets, which is used to generate more income (Oladokun, 2015). It is an expenses on vital infrastructure such as the construction of bridges, roads, schools, hospitals, highways, prisons, dams, irrigation system and public administrative buildings, the purchase of equipment and machinery, supply of electricity power, pipe borne water, transportation system, educational and health facilities

2.2 Theoretical Review

This study is theoretically underpinned by Wagner's law of increasing state activities and Peacock and Wiseman's Theory. Wagner's Law of increasing state activities was founded by a German Economist, Adolf Wagner in 1883. His major assumption in this theory is that rising public expenditures cause an increase in the growth of the economy. It is believed that Wagner (1883) was the first scholar to propose that public expenditures function as an endogenous determinant of economic growth. In the real sense of it, economic growth is evidenced in gross domestic product or gross national product, and these are evidence of a high rate of production, good standard of living, stable prices, good infrastructures and so on. Furthermore, these proxies of economic growth cannot be achieved in any State without the input of public expenditures. Thus, public expenditures influence economic growth.

Another assumption of this theory is that as much as public expenditures influence economic growth, it also rises faster than economic growth (Seda, Selim& Mustafa, 2015). This might be because budgets are usually puffed up, but are not totally implemented in the economy. Normally, for any State, public expenditures are sponsored by internally generated revenue. And in Nigeria, internally generated revenue for States is complemented with Statutory Allocation from the Federal Government on an annual basis. However, there are times when the combination of internally generated revenue and statutory allocation is inadequate to sponsor the budgeted public expenditures. In such cases, the last option is borrowing.

This theory has strong significance based on its weighty assumptions. However, some shortcomings are noted. Firstly, this theory according to Manuel (2018), was established based on long-run analysis only, which constitutes a limitation for the theory. Emphatically, public expenditures are also given in the short-run, so Wagner's theory ought to have considered that fact too. The relevance of this theory to the study is in its clarity that public expenditures which determine economic growth is further influenced by other factors. These factors include internally generated revenue and statutory allocation. And in scenarios where these two forms of revenue are insufficient for the State, they still have the option of domestic debt. This theory

expounds that revenue, in terms of internally generated revenue, statutory allocation and domestic debts have a profound influence on the proposed public expenditures of States.

Alan T. Peacock and Jack Wiseman (1961) established Peacock and Wiseman's theory as a supplement to Wagner's Law of Increasing State Activities. That is, this theory was established after carrying out empirical studies on public expenditures in the United Kingdom. It is worthy to note that Peacock and Wiseman's theory is one of the few theories to have empirical backings, as most theories are borne out of deductive reasoning, experience or personal observations. In continuation, the timeframe for the empirical study behind this theory seems to be during the first and second world wars, where the global economy was plunged into a period of economic depression because of the multiplier effects of the war.

One of the assumptions of this theory is that public expenditure moves in a step-like pattern, caused by economic crises. Due to this, the government needs to source alternative means to finance its budget. According to Peacock and Wseman (1961), the major means for States to finance their rising public expenditures is by increasing their internally generated revenue. They achieve this by increasing the tax rate of the citizens. They also noted that such an increase in tax rates would be met with displeasure and reluctance by the citizens. In modern times, States hardly improve their revenue by increasing tax rates. Instead, they obtain Statutory Allocation in addition to their internally generated revenue, and in cases, where both sources of revenue are inadequate, domestic debt becomes the ultimate option.

This theory holds great practicality in its assumption that rising public expenditures cause governments to seek ways to increase their revenue to augment the rising expenditures. Despite the practicality of this theory, it has been criticized based on some limitations. Firstly, the theory was established based on empirical studies that covered a period of major world wars (Magnus, 2016). In today's context, such world wars are not evident. Thus, public expenditures cannot be said to move in a step-like pattern. Another criticism of this theory is that it concentrated much on only how wars can influence public expenditures in a State, ignoring other significant factors like immigration, urbanization, technology advancements and so on.

This theory finds great relevance to the study due to its connection between rising public expenditures and increasing revenue. In relation to the study, revenue in the context of this theory refers to internally generated revenue (IGR), Statutory Allocation (SA) and domestic debt (DD). From this theory, it can be said that public expenditures influence government revenues. This is because if public expenditures do not increase, there would be no need to seek for additional revenue to balance the expenditures. Thus, this theory affirms that public expenditures influence government revenue.

2.3 Conceptual Connectivity

The connection between the determinants (Internally Generated Revenue, Statutory Allocation and Domestic Debt) and the outcome variable, captured with capital and recurrent expenditure is shown in figure 1. Figure 1 clearly shows that government expenditure is a function of Internally Generated Revenue, Statutory Allocation and Domestic Debt.

Independent Variable (Determinants)

Dependent Variable (Government Expenditure)

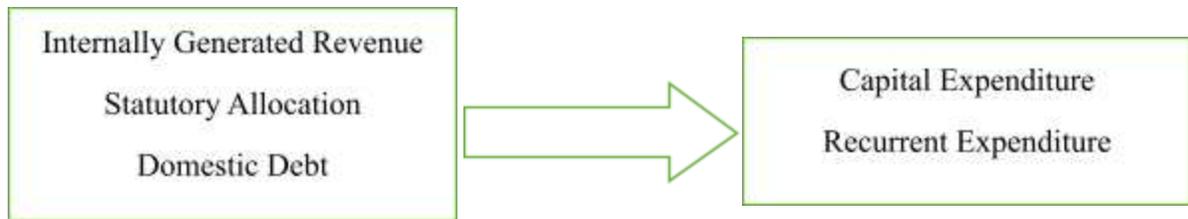


Figure 1: Conceptual Connectivity

Source: Author's Design (2021)

2.3 Empirical Review

Studies on the nexus between domestic debt, statutory allocation and IGR as the determinant of government expenditure is not without ambiguities. Some of the studies reported a positive and significant relationship, positive and insignificant relationship, negative but significant relationship and some reported negative and insignificant relationship between the variables. For instance, it was revealed that public expenditure granger causes domestic debt in a study conducted by Oladokun (2015). The study used a granger causality test to analyze a dataset from 1981 to 2012. Similarly, Duc-Anh, Phu and Arnelie (2015) affirmed that public debt exerts a positive but insignificant effect on public capital expenditure for a period of 1995-2014 using regression analysis.

In AkwaIbom State, Nnaseh and Akpan (2015) employed a regression analysis method to investigate the effects of IGR on infrastructural development with a data set spanning from 2000-2012. The result revealed that IGR contributed positively and significantly to the provision of water, electricity and roads but the road construction was most favoured. In the study of Ukwueze (2015), it was shown that the revenue size significantly influenced the size of public expenditure. Also, external and domestic debts significantly influenced the size of government expenditure. The study used ECM and OLS analysis models for data covering 1961 to 2012 in Nigeria.

The active nature of public expenditure components and public debt in China was investigated by Antra Bhatt (2015) covering a period of 1980-2013. ECM unveiled that capital expenditure is co-integrated with domestic debt of the government. However, the studies of Agata (2015) and Ezebuilo (2015) centered on the determinants of government expenditure in Nigeria covering a different period. Both studies employed OLS and showed that the external and domestic debts significantly influence government expenditure.

Grace (2016) examined the implications of shocks of public debt and government expenditure on human capital development and growth looking at the role of fiscal constraints through the introduction of government budget constraints for a set of preferred developing countries from 1980-2013. The regression result indicated that government expenditure has a positive role to play in developing human capital and sustainability seems uncertain for countries that have fiscal constraints. The determinant of public expenditure was examined by Joseph (2016) using annual

time series data from 1991 to 2017 in Uganda. The residual test showed that there is a stable long-run relationship among the variables.

Empirically, Abdulai (2016) and Odo, Igberi and Anoke (2016) conducted a similar study to ascertain the effects of government domestic borrowing on economic growth using time series data. The result from the OLS technique indicated that domestic debt has a negative effect on economic growth while external debt shows a positive effect on economic growth. Guru, (2016) covered 1980 to 2013 to investigate the nexus between domestic debt and public expenditure in Nigeria. Using OLS, the study revealed a significant relationship between domestic debt and government expenditure in Nigeria. Relating to Jordan public expenditure, Sultan and Mustafa (2016) analyzed the factors that affect the Jordanian total government expenditures (2000-2014). The result of the simple linear regression indicated that population, unemployment and inflation rates are significantly related to public expenditures.

Glenda (2017), David (2017), Silas, Ambrose and Gerald (2019) and Adofu and Abula (2019) share a common view on the nexus between domestic debt and government economics in developing countries using a time series dataset covering different periods. They all concluded that domestic debt has a positive but insignificant effect on public expenditure in developing countries.

Statutory allocation and budget implementation in Nigeria (2008-2017) was critically examined by Olaoye and Bankole (2019) across the southwest geopolitical zone of Nigeria using an OLS estimator. Results showed that statutory allocation exerts insignificant, positive impact on actual expenditure and that there is no existence of causal relationship between statutory allocation and actual expenditure of southwest states in Nigeria. Adamu and Chandana (2019) determinants of government expenditure in Nigeria (1970-2017) using ARDL analysis method. The study concluded that oil revenue, GDP, population, trade openness, oil price, taxation and inflation are important determinants of the size of Nigeria's government expenditure. In a similar study, Olowolaju, Ajibola and Falayi (2020) employed a regression model and revealed that Statutory Allocation and IGR were jointly having a positive correlation with GDP.

2.4 Gaps in Literature

It appeared that no single study, at the disposal of the researcher, has examined the determinants of government expenditure in Southwest Nigeria, that constitutes the geographical location for this study. This may affect policy formulation and budget implementation in terms of public expenditure in the region. This study bridged this gap by examining the determinants of government expenditure in Southwest Nigeria with a specific focus on how internally generated revenue, federal allocation and domestic debt determined the magnitude of government expenditure in terms of both capital and recurrent expenditure. The following hypotheses are formulated to guide this study:

H_{01} : there is no significant effect internally generated revenue on public expenditure in Southwest, Nigeria;

H_{02} : there is no significant effect federal allocation on public expenditure in Southwest, Nigeria;

H₀₃: there is no significant effect of domestic debt on public expenditure in Southwest Nigeria.

3.1 Methodology

The study adopted ex-post facto research design and all the entire states, Lagos, Ogun, Oyo, Osun, Ondo and Ekiti, in the southwest region of Nigeria were considered. The choice of the geographical location is based on the identified gaps in literature that studies in this context are relatively few in the region. The study covered 10 years, spanning from 2010 to 2019 and the panel data used was sourced from the CBN statistical bulletin (2019) and the annual budget of each of the sampled states. The selection of scope is based on the need to capture periods of domestic economic recession that seriously affected government business and the eagerness to reveal the efficiency of the government policies. This study used descriptive statistics of mean, standard deviation, minimum and maximum values to describe the variables used in the study. This was followed by Pearson correlation and panel regression analysis. Table 1 described the variables and sources. The model used by Adamu and Chandana (2019) to examine the determinants of government expenditure in Nigeria was adapted. The functional and linear representation of the model is given thus:

$$GEX_{it} = \alpha_0 + \alpha_1 GDP_{it} + \alpha_2 OIR_{it} + \alpha_2 DEB_{it} + \alpha_2 POP_{it} + \alpha_2 INF_{it} + \alpha_2 TOP_{it} + \varepsilon_i \dots (1)$$

Where: GEX is Government Expenditure, GDP is Gross Domestic Debt, OIR is Oil Revenue, DEB is Debt, POP is Population, INF is Inflation Rate and TOP is Trade Openness and f is functional relation. However, the model was modified by capturing government expenditure with capitaland recurrent expenditure and the determinants used were those that were relevant to the state governments in terms of internally generated revenue, statutory allocation and domestic debt. The functional and linear representation of the models are given in equation 2 and 3.

Model I:

$$REX_{it} = \alpha_0 + \alpha_1 IGR_{it} + \alpha_2 SAL_{it} + \alpha_3 DOD_{it} + \varepsilon_{1t} \dots (2)$$

Model II:

$$CEX_{it} = \alpha_0 + \alpha_1 IGR_{it} + \alpha_2 SAL_{it} + \alpha_3 DOD_{it} + \varepsilon_{1t} \dots (3)$$

Where REX is recurrent expenditure, IGR is Internally Generated Revenue, SAL is statutory allocation, α_0 is the intercept, $\alpha_1 \dots \alpha_3$ are the slope parameters, subscript "it" represents the combination of time and individuality and ε means error term.

Table 1: Description of Variables and Sources

Dependent Variables	Description	Sources
Capital Expenditure	This denotes investment expenditures that intensify the capital stock of the nation	State Budget
Recurrent Expenditure	This means all payments other than for capital assets, which denotes payments on goods and services, (employer contributions, wages and salaries), interest payments, subsidies and transfers.	State Budget
Independent Variables		
Domestic Debt	This is the total amount of State debt raised within the country.	CBN Statistical bulletin
Control Variables		
Statutory Allocation	This is the fund transfer to the state government by the federal government on a monthly basis for the management and governance of the state.	State Budget
Internally Generated Revenue	Internally generated revenue is the total revenue generated within the state for a specified period	State Budget

Source: Author's Compilation (2021).

4.0 Results and Discussion

4.1 Results

4.1.1 Descriptive Statistics

Mean, standard deviation, minimum and maximum were used to describe all the variables covered by this study.

Table 1: Descriptive Statistics

	LCEX	LREX	LIGR	LSAL	LDOD
Mean	24.46	25.2	24.05	23.1	11.05
Std. Dev.	1.74	1.31	1.54	1.76	1.04
Minimum	21.87	21.23	21.64	19.38	8.48
Maximum	27.67	27.58	26.67	25.35	13.18

Source: Author's Computation (2021). Where: LCEX is Capital Expenditure, LREX is Recurrent Expenditure, LIGR is Internally Generated Revenue, LSAL is Statutory Allocation and LDOD is Domestic Debt

Table 2, shows the analysis of a period of 10 years spanning from 2010 to 2019. The descriptive statistics depict that the average value for capital expenditure is 24.46, with minimum and maximum values of 21.87 and 27.67 respectively. The standard deviation of 1.74 shows that the risk is lower, as it is relatively far from its mean figure. In the same result, the mean value of recurrent expenditure is at 25.2, with minimum and maximum values of 21.23 and 27.58

respectively and a standard deviation of 1.31 which shows that the risk is lower, as it is relatively far from its mean figure. Also, the mean value of internally generated revenue is at #24.05 billion with minimum and maximum values of 21.64 and 26.67 Like capital and recurrent expenditure, the standard deviation (1.54) shows that its risk is lower, as it is relatively far from its mean value. For statutory allocation, the mean value stood at 23.1, with minimum and maximum values of 19.38 and 25.35 respectively. The standard deviation (1.76) shows that its risk is relatively low because its standard deviation value is far from its mean. Finally, domestic debt's mean value is 11.05, with minimum and maximum values of 8.48 and 13.18 respectively. Its standard deviation of 1.04 shows that its risk is lower, as it is relatively far from its mean value.

4.1.2 Correlation Analysis

Table 2: Correlation Matrix

	LCEX	LREX	LIGR	LSAL	LDOD
LCEX	1				
LREX	0.781	1			
LIGR	0.897	0.740	1		
LSAL	0.836	0.581	0.382	1	
LDOD	0.417	0.360	0.357	0.419	1

Source: Author's Computation (2021)

As presented in table 3, there exists a positive relationship between capital expenditure, recurrent expenditure, internally generated revenue, statutory allocation and domestic debt with the correlation coefficient of 0.781 for recurrent expenditure, 0.897 for Internally Generated Revenue, 0.836 for statutory allocation and 0.417 for domestic debt. This implies that the variables moved in similar directions across the southwest states for the period covered by the study. Similarly, there is a positive relationship between recurrent expenditure, internally generated revenue, statutory allocation and domestic debt with correlation coefficient values of 0.740, 0.581 and 0.360 respectively. Also, the result showed that there exists a positive relationship between internally generated revenue, statutory allocation and domestic debt with the correlation coefficient of 0.382 for statutory allocation and 0.357 for domestic debt. Also, a positive relationship between statutory allocation and domestic debt with a correlation coefficient of 0.419. The result further revealed that the relationship between domestic debt and the other predictor variables was positive.

4.3 Regression Analysis

Model I: Analysis of the determinants (internally generated revenue, state allocation and domestic debt) on public expenditure (capital expenditure) in Nigeria.

Table 3: Pooled OLS Estimation Result

Series: LCEX, LIGR, LSAL, LDOD

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>T-Test</i>	<i>Probability</i>
C	-0.344	1.626	0.21	0.834
LIGR	0.719	0.106	6.78	0.000
LSAL	0.356	0.093	3.82	0.000
LDOD	-0.064	0.111	0.58	0.567

R-square=0.8536, Adjusted R-square=-0.8437, F-statistics=85.55, Prob(F-stat) =0.0000
 (*) connotes significance at 5% level of significance

Source: Author's Computation (2021).

Table 4 represented the Pooled estimation result which revealed that when heterogeneity effect across the southwest states covered in the study is no given consideration, internally generated revenue and statutory allocation exert a positive significant effect on capital expenditure of Southwest states in Nigeria with the coefficient and probability values of 0.719 ($p=0.000 < 0.05$) and 0.356 ($p=0.000 < 0.05$) respectively. Also, there exists a negative and insignificant relationship between domestic debt and capital expenditure in southwest Nigeria with the correlation coefficient and probability values of -0.064 and 0.567 respectively. The reported adjusted r-square showed that about 84% of the systematic variation in capital expenditure can be jointly explained by internally generated revenue, statutory allocation and domestic debt while the remaining 16% could be accounted for by other variables not covered by this study. The F-statistics of 85.55 along with the probability value of 0.000 revealed that the model is fit.

Table 4: Fixed Effects Estimates (Cross-sectional and Period specific)
Series: LCEX, LIGR, LSAL, LDOD

CROSS-SECTIONAL SPECIFIC EFFECT			TIME SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
C	-13.139	0.019	C	0.720	0.673
LIGR	1.315	0.000	LIGR	0.717	0.000
LSAL	0.343	0.236	LSAL	0.380	0.000
LDOD	-0.061	0.733	LDOD	-0.252	0.068
Effects			Effects		
ONDO	1.197	0.008	2011	0.222	0.339
OSUN	0.879	0.251	2012	0.718	0.663
OGUN	1.194	0.198	2013	0.443	0.281
OYO	1.994	0.055	2014	0.383	0.349
LAGOS	3.118	0.009	2015	0.493	0.249
		0.214	2016	0.811	0.074
		0.947	2017	1.053	0.025
		0.634	2018	0.742	0.102
		0.286	2019	0.660	0.004
Adjusted R-square=0.8968 F-statistics=42.38 Prob(F-stat)=0.0000			Adjusted R-square=0.8449 F-statistics=26.61 Prob(F-stat)= 0.0000		

Source: Author's Computation (2021).

The fixed effect estimation result was represented in table 4 which includes both the cross-sectional and time effect estimation results. The results indicated that when the diversity of the operational activities and leadership skills across the southwest states are considered, internally generated revenue and statutory allocation exert a positive relationship with capital

expenditure across the southwest states in Nigeria. However, the positive effect of statutory allocation, unlike that of internally generated revenue, is insignificant to the tune of 0.343 ($p=0.236 > 0.05$) and 1.315 ($p=0.000 < 0.05$) respectively. On the contrary, domestic debt exerts a negative insignificant effect on capital expenditure across the southwest states in Nigeria to the tune of -0.061 ($p=0.733 > 0.05$). The reported adjusted r-square revealed that about 90% of the systematic variation in capital expenditure can be explained by all the predictor variables while the remaining 10% could be accounted for by other variables not covered by this study. The F-statistics of 42.38 along the probability value of 0.000 revealed that the model is fit.

As regards the time-specific estimation result, table 4 showed that when the time covered by this study are put into consideration, both internally generated revenue and statutory allocation have a positive and significant effect on capital expenditure across the southwest states in Nigeria to the tune of 0.717 ($p=0.000 < 0.05$) and 0.380 ($p=0.000 < 0.05$) respectively. Also, domestic debt exerts a negative insignificant effect on capital expenditure in Southwest, Nigeria with the correlation coefficient and probability values of -0.252 and 0.068 respectively. Reported adjusted R-square revealed that about 84% of the systematic variation in capital expenditure can be jointly explained by all the explanatory variables while the remaining 16% could be accounted for by other variables not covered by this study. The F-statistics of 26.61 along with the probability value of 0.0000 revealed that the model is fit.

Table 5: Random Effect Estimation
Series: LCEX, LIGR, LSAL, LDOD

Variable	Coefficient	Standard Error	Z-Test Values	Probability
C	-1.774	2.199	0.81	0.420
LIGR	0.798	0.14053	5.68	0.000
LSAL	0.309	0.1254	2.47	0.014
LDOD	-0.0095	0.1213	0.08	0.938

R-square=0.8517, Wald chi2(5) =145.85, Prob> chi2 =0.0000

Source: Author's Computation (2021).

From table 5 above, it was revealed that when the error term absorbed the heterogeneity effect across the southwest states in Nigeria and over time, internally generated revenue and statutory allocation have a positive and significant effect on capital expenditure to the tune of 0.798 ($p=0.000 < 0.05$) and 0.309 ($p=0.014 < 0.05$) respectively. Also, domestic debt exerts a negative insignificant effect on capital expenditure across the Southwest States in Nigeria with the correlation coefficient and probability values of -0.0095 and 0.938 respectively. The reported adjusted r-square revealed that about 85% of the systematic variation in capital expenditure can be jointly explained by all the explanatory variables while the remaining 15% could be accounted for by other variables not covered by this study. The Wald Chi of 145.85 along with the probability value of 0.000 revealed that the model is fit.

Table 6: Restricted F Test of Heterogeneity (Cross-Sectional and Time Specific)

	F-statistics	Probability
Cross-sectional	3.27	0.0147
Time-specific	1.05	0.4133

Source: Data Analysis (2021)

The reported F-statistics in table 6 stood at 3.27 and 1.05 with probability values of 0.0147 and 0.4133 for cross-sectional and period-specific effects respectively. This showed that there is not enough evidence to reject the null hypothesis that all differential intercept corresponding to each cross-sectional specific firm is equal to zero, but otherwise for the period-specific intercepts. This implies that there is no significant cross-sectional heterogeneity effect amidst the southwest states in Nigeria thus invalidating the restriction of pooled OLS estimation, in favour of time fixed effect estimation.

Table 7: Hausman Test

	Chi-square stat	Probability
Difference in coefficient not systematic	11.35	0.0100

Source: Data Analysis (2021)

Table 7 reported Chi-square statistics of 11.35 and a probability value of 0.0100. The result revealed that there is enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimation and random effect estimation are not significant. Hence, the difference in the coefficient is systematic. Therefore, the most consistent and efficient estimation is given by the fixed effect estimation as presented in Table 4 in relation to the cross-sectional estimation result.

Table 8: Other Post Estimation Test

Wald test		
Null hypothesis	Statistics	Probability
Panel homoscedasticity	1.36	0.3022
Pesaran test		
Null hypothesis	Statistics	Probability
No cross sectional dependence	0.432	0.6659
Wooldridge test		
Null hypothesis	Statistics	Probability
No AR (1) panel autocorrelation	2.4343	0.0972

Source: Author's Computation, (2021)

Results presented in table 8 showed that there is no evidence to reject null hypothesis on panel homoscedasticity, null hypothesis of no cross-sectional dependence and null hypothesis of no AR (1) panel autocorrelation, given the reported probability statistics of $0.3022 > 0.05$ for Wald test, $0.6659 > 0.05$ for Pesaran test, and $0.0972 > 0.05$ for Wooldridge test. Hence it can be established in the study that assumptions of equal variance of residual terms, cross-sectional independence and absence of serial autocorrelation for the estimated panel-based model is valid.

Model II: Analysis of the determinant (Internally Generated Revenue, State Allocation and Domestic debt) on public expenditure (Recurrent Expenditure) in Nigeria.

Table 9: Pooled OLS Estimation Result

Series: LREX, LIGR, LSAL, LDOD

<i>Variable</i>	<i>Coefficient</i>	<i>Std Error</i>	<i>T-Test</i>	<i>Probability</i>
C	9.956	2.14	4.40	0.000
LIGR	0.616	0.14	0.02	0.986
LSAL	0.002	0.12	0.24	0.814
LDOD	0.035	0.15	4.64	0.000

R-square=0.5475, Adjusted R-square=-0.5166, F-statistics=17.74, Prob(F-stat) =0.0000

() connotes significance at 5% level of significance*

Source: Author's Computation (2021).

Table 9 represented the Pooled estimation result which revealed that when heterogeneity effect across the southwest states covered in the study is no given consideration, internally generated revenue and statutory allocation exert a positive but insignificant effect on recurrent expenditure of Southwest states in Nigeria, with coefficient estimate of 0.616 ($p=0.986 > 0.05$) and 0.002 ($p=0.814 > 0.05$) respectively. Also, there exists a positive significant relationship between domestic debt and recurrent expenditure in southwest Nigeria with the correlation coefficient and probability values of 0.035 and 0.000 respectively. The reported adjusted r-square showed that about 52% of the systematic variation in recurrent expenditure can be jointly explained by internally generated revenue, statutory allocation and domestic debt while the remaining 48% could be accounted for by other variables not covered by this study. The F-statistics of 17.74 along the probability value of 0.000 revealed that the model is fit.

Table 10: Fixed Effects Estimates (Cross-sectional and Period specific)
Series: LREX, LIGR, LSAL, LDOD

CROSS-SECTIONAL SPECIFIC EFFECT			TIME SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
C	-5.135	0.268	C	11.074	0.000
LIGR	0.723	0.002	LIGR	0.622	0.000
LSAL	0.639	0.012	LSAL	0.015	0.904
LDOD	0.0504	0.677	LDOD	-0.182	0.315
Effects			Effects		
ONDO	1.436	0.000	2011	1.087	0.314
OSUN	2.214	0.002	2012	0.416	0.445
OGUN	4.121	0.000	2013	0.722	0.189
OYO	2.315	0.010	2014	0.908	0.100
LAGOS	4.084	0.000	2015	1.003	0.082
			2016	1.079	0.074
			2017	1.267	0.041
			2018	1.147	0.062
			2019	1.023	0.241
Adjusted R-square=0.8406 F-statistics=31.98 Prob(F-stat)=0.0000			Adjusted R-square=0.5114 F-statistics=5.92 Prob(F-stat)= 0.0000		

Source: Author's Computation (2021).

Table 10 revealed that when the diversities across the southwest states are considered, internally generated revenue and statutory allocation exert a positive significant relationship with recurrent expenditure across the southwest states in Nigeria to the tune of 0.723 ($p=0.002 < 0.05$) and 0.639 ($p=0.012 < 0.05$) respectively. On the contrary, domestic debt exerts a positive insignificant effect on recurrent expenditure across the southwest states in Nigeria to the tune of 0.0504 ($p=0.677 > 0.05$). The reported adjusted r-square revealed that about 84% of the systematic variation in recurrent expenditure can be explained by all the predictor variables while the remaining 16% could be accounted for by other variables not covered by this study. The F-statistics of 31.98 along with the probability value of 0.000 revealed that the model is fit.

As regards the time-specific estimation result, table 10 showed that when the time covered by this study is put into consideration, both internally generated revenue and statutory allocation have a positive effect on recurrent expenditure across the southwest states in Nigeria. However, the positive effect is only significant for internally generated revenue as against statutory allocation to the tune of 0.622 ($p=0.000 < 0.05$) and 0.015 ($p=0.904 > 0.05$) respectively. Also, domestic debt exerts a negative insignificant effect on recurrent expenditure in Southwest, Nigeria with the correlation coefficient and probability values of -0.182 and 0.315 respectively. Reported adjusted r-square revealed that about 51% of the systematic variation in recurrent expenditure can be jointly explained by all the explanatory variables while the remaining 49% could be accounted for by other variables not covered by this study. The F-statistics of 5.92 along with the probability value of 0.000 revealed that the model is fit.

Table 11: Random Effect Estimation
Series: LREX, LIGR, LSAL, LDOD

Variable	Coefficient	Standard Error	Z-Test Values	Probability
C	-1.105	4.212	0.26	0.793
LIGR	0.670	0.203	3.30	0.001
LSAL	0.389	0.211	1.84	0.065
LDOD	0.109	0.118	0.93	0.352

R-square=0.5108, Wald chi2(5)=45.92, Prob> chi2 =0.0000

Source: Author's Computation (2021). Where: LREX is Recurrent Expenditure LIGR is Internally Generated Revenue, LSAL is Statutory Allocation and LDOD is Domestic Debt

From table 11 above, it was revealed that when the error term absorbed the heterogeneity effect across the southwest states in Nigeria, statutory allocation and domestic debt have a positive but insignificant effect on recurrent expenditure to the tune of 0.389 ($p=0.065 > 0.05$) and 0.109 ($p=0.352 > 0.05$) respectively. Also, internally generated revenue exerts a positive significant effect on recurrent expenditure across the Southwest States in Nigeria with the correlation coefficient and probability values of 0.670 and 0.001 respectively. The reported adjusted r-square revealed that about 51% of the systematic variation in recurrent expenditure can be jointly explained by all the explanatory variables while the remaining 49% could be accounted for by other variables not covered by this study. The Wald Chi of 45.92 along with the probability value of 0.000 revealed that the model is fit.

Table 12: Restricted F Test of Heterogeneity (Cross-Sectional and Time Specific)

	F-statistics	Probability
Cross-sectional	18.89	0.0000
Time-specific	0.93	0.4931

Source: Data Analysis (2021)

The reported F-statistics in table 12 stood at 18.89 and 0.93 with probability values of 0.0000 and 0.4931 for cross-sectional and period-specific effects respectively. This showed that there is not enough evidence to reject the null hypothesis that all differential intercept corresponding to each cross-sectional specific firm is equal to zero, but otherwise for the period-specific intercepts. This implies that there is no significant cross-sectional heterogeneity effect amidst the southwest states in Nigeria thus invalidating the restriction of pooled OLS estimation, in favour of time fixed effect estimation.

Table 13: Hausman Test

	Chi-square stat	Probability
Difference in coefficient not systematic	4.99	0.1728

Source: Data Analysis (2021)

Table 13 reported a chi-square statistic of 4.99 and probability value of 0.1728. The result revealed that there is not enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimation and random effect estimation are not significant. Therefore, the most consistent and efficient estimation is given by the random effect estimation as presented in table 11.

Table 14: Other Post Estimation Test

<i>Wald test</i>		
Null hypothesis	Statistics	Probability
<i>Panel homoscedasticity</i>	1.035	0.6490
<i>Pesaran test</i>		
Null hypothesis	Statistics	Probability
<i>No cross sectional dependence</i>	1.195	0.2322
<i>Wooldridge test</i>		
Null hypothesis	Statistics	Probability
<i>No AR (1) panel autocorrelation</i>	3.904	0.0895

Source: Author's Computation, (2021)

Results presented in table 8 showed that there is no evidence to reject null hypothesis on panel homoscedasticity, null hypothesis of no cross-sectional dependence and null hypothesis of no AR (1) panel autocorrelation, given the reported probability statistics of $0.6490 > 0.05$ for Wald test, $0.2322 > 0.05$ for Pesaran test and $0.0895 > 0.05$ for Wooldridge test. Hence it can be established in the study that assumptions of equal variance of residual terms, cross-sectional independence and absence of serial autocorrelation for the estimated panel-based model is valid.

4.5 Discussion of Findings

An attempt has been made to unravel the determinants of public expenditure across all the states in the Southwest region of the federation. Based on the most consistent and efficient estimation, it was discovered that internally generated revenue exerts a positive significant effect on both capital and recurrent expenditure across the Southwest states in Nigeria to the tune of 1.315 ($p=0.000 < 0.05$) and 0.670 ($p=0.001 < 0.05$) respectively. This implies that a 1% increase in internally generated revenue could engender a rise in the public expenditure. The outcome is in line with the a-priori expectation and it further confirms the postulation of Peacock and Wseman (1961), that increase in the size of expenditure is predicted on the available revenue. This might be due to the efficiency and effectiveness of the internally generated revenue officers, general awareness and government policies as it relates to IGR components. This finding gives credence to the conclusion of Nnanseh and Akpan (2015), Ukwueze (2015) and Adan (2019) that there exists a positive relationship between IGR and government expenditure.

It was equally discovered that statutory allocation exerts a positive but insignificant effect on both capital and recurrent expenditure across the southwest states in Nigeria for the period covered to the tune of 0.34 ($p=0.236 > 0.05$) for capital expenditure and 0.389 ($p=0.065 > 0.05$) for recurrent expenditure. The corollary of this outcome is that a rise in statutory allocation would bring a rise in public expenditure in the southwest, Nigeria. The positive coefficient is in line with the a-priori expectation. However, the insignificant effect might be due to factors such as corruption, misplaced priority and inflation. This outcome was in tandem with the findings of (Olaoye & Bankole, 2019).

Also, it was discovered that domestic debt exerts a negative insignificant effect on capital expenditure across the southwest states in Nigeria to the tune of -0.061 ($p=0.733 > 0.05$). This implies that public debt does not help in explaining the growth of government expenditure in Nigeria. This finding contradicts theoretical postulation that public debt influences the expansion of public expenditure through debt servicing. The result is also in contrast with studies conducted by Aregbeyen and Akpan (2013), and Okafor and Eiya (2011) that found that public debt has a strong correlation with growth of the size of government expenditure. The insignificant effect of domestic debt to capital expenditure might be attributed to the corrupt practices among the governments of the southwest states in Nigeria resulting in the embezzlement of public funds.

Finally, domestic debt has a positive but insignificant effect on recurrent expenditure to the tune of 0.109 ($p=0.352 > 0.05$). The corollary of this outcome is that an increase in domestic debt would bring about an increase in the recurrent expenditure insignificantly. This reveals that a 1% increase in domestic debt will increase the amount expended on recurrent expenditure by 10% but not in a significant way. This discovery implies that domestic debt cannot independently improve recurrent expenditure significantly. This might be due to the inefficiency of the government to judiciously use the domestic debt to improve the recurrent expenditure incurred for the day-to-day running of the public offices. This outcome gave credence to the conclusion of Glenda (2017), David (2017), Silas, Ambrose and Gerald (2019) and Adofu and Abula (2019).

5.1 Conclusion and Recommendations

The continuous discussion on what determines the size of government expenditure is germane for the development of the economy in terms of the management of the fiscal imbalances and the overall improvement of the economic activities. However, it appeared that no single study, at the disposal of the researcher, has examined the determinants of government expenditure in Southwest Nigeria, that constitutes the geographical location for this study. This may affect policy formulation and budget implementation in the region. This was the motivation for this study and based on the findings made, it was established that internally generated revenue, statutory allocation and domestic all have a statistically significant effect on public expenditure across all the states in the Southwest region of Nigeria. Thus, it was recommended that:

- i. Government officers saddled with the responsibility of revenue generation should be expressly catered for. This might increase their efficiency and consequently accrue more revenue to the purse of the government. Strict penalties must be melted out to corrupt tax officers and other government representatives.
- ii. Excessive dependence on statutory allocation should be discouraged. This might re-engineer the focus of state governments that the needed growth and development can be attained through internally generated revenue.
- iii. Available revenue should be judiciously utilized on the pressing needs of the state. While revenue is needed for the functionality of the government, state governments are urged to embrace more capital projects through which additional revenue might be generated.
- iv. Domestic consumption should be discouraged because it has no capacity to engender increase in the magnitude of capital expenditure in the region covered. In the same vein, judicious utilization of domestic debt coupled with a sound internal control

system might improve the operational activities of state governments in the Southwest region of Nigeria.

DECLARATIONS

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and materials

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Competing interests

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Authors' contributions

BS performed the review of articles, fashioned out the methodology and carried out the discussion of findings of this study. AT analysed, interpreted the results emanating from the study and OD did the content editing

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