IMPACT OF GOVERNMENT SIZE ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT: The study examines the relationship between government size (measured as government spending as a percentage of GDP) and economic growth in Nigeria, using the FMOLS method to analyse secondary data from 1981 to 2021 sourced from the Central Bank of Nigeria's Statistical Bulletin. It found a significant and positive long-term connection between government size and economic growth, with a coefficient of 0.582 indicating the impact of government spending on growth. This underscores the importance of government expenditure in driving Nigeria's economic progress, emphasizing the necessity for efficient and effective spending policies to enhance growth outcomes in the country.

Keywords: Government Size, Government Expenditure, Economic Growth, FMOLS

INTRODUCTION

In the realm of economic theory and policy, the relationship between government size (measured as government spending as a ratio of GDP) and economic growth stands as a central point of contention and investigation. At its core, government spending encompasses the allocation of resources towards essential public goods and services, aimed at fostering societal welfare and catalysing economic development. However, the impact of government expenditure on economic growth remains a subject of debate, particularly in the context of developing nations such as Nigeria.

Nigeria, with its fluctuating economic landscape, provides a compelling case study to explore the interplay between government spending and economic growth. Over the years, government expenditure in Nigeria has surged significantly, yet economic growth rates have not consistently mirrored this trajectory. For instance, available data from the Central Bank of Nigeria (CBN), revealed that the percentage share of Federal government expenditure to GDP (Government size) has increased significantly from 6.6% in 1961 to over 500% in 2010. Particularly, it rose from about 21% in 1970 to 47% in 1980. More significantly, the years 1993 and 1999, witnessed a high increase in government expenditure. It increased from 34.2% in 1992 to 69.6% in 1993 – indicating a rise of 35.4%. It also increased from 156.7% in 1998 to 303.6% in 1999, with actual figures of ₦487.1billion and ₦1947.69billion respectively. (CBN Statistical Bulletin, 2014). These periods coincided with the end of the military regime and the beginning of the civilian regime in Nigeria, which probably led to a sharp increase in expenditure as a result of the general elections. Ogundipe and Oluwatobi, (2014) reported that the growth in public spending in Nigeria is mostly due to the rise in recurrent expenditure, while capital expenditure grows at a slower rate. Thus, total government recurrent expenditure was a report dated to have increased with about 18% rise from 1970-1985 and with about 10% from 1990-2005.

In 2000, government expenditure dropped to ₦701.06 billion and later rose to ₦1018.03 billion in 2001. Government expenditure amounted to ₦1018.18 billion in 2002, ₦1225.99 billion in 2003, ₦1426.2 billion in 2004, ₦1660.7 billion in 2005, and continued to rise consecutively up till 2009 when it fell to ₦2642.98 billion from ₦3193.44 billion in 2008 as a result of the crash in the prices of crude oil at the time (CBN, 2010). In 2010, aggregate government expenditure increased by 15.3% from the level in 2009, while the growth rate of GDP increased only by 0.9% (from 7.0% in 2009 to 7.9% in 2010). The aggregate government expenditure represented 28.4% of the GDP in 2010 as against 28.8% in 2009, with an average annual growth rate of 6.7% which was below the target growth rate of 10% for the year (CBN, 2010). From 2010 to 2018, government spending in Nigeria averaged ₦1031026.93 Million, recording the highest amount of ₦1615675.03 Million in the fourth quarter of 2010 and the lowest amount of ₦624001.80 Million in the third quarter of 2017. It later increased to ₦795880.30 Million in the fourth quarter of 2017. In 2018 and 2019, total government expenditure stood at ₦7813.74 Billion and ₦9714.84 Billion respectively (CBN, 2019).

On the part of economic growth, Nigerian Gross Domestic Product has shown a sluggish trend from the 1960s till the 1980s when it began to progress successively with some fluctuations. Available statistics show that GDP in Nigeria averaged $97.52 billion from 1960 to 2017, with the highest amount of $568.50 billion recorded in 2014, and the lowest amount of $4.20 billion recorded in 1960. Nigerian GDP stood at $375.77 billion in 2017, which represents 0.61% of the world`s economy. In 2018 and 2019, GDP stood at ₦127,762.55 Billion, and ₦144,210.49 Billion respectively (CBN, 2019). This incongruity prompts a critical inquiry into the effectiveness of government spending as a catalyst for economic growth in the Nigerian context.

By analysing data from the Central Bank of Nigeria, this paper seeks to unravel the dynamics between government spending and economic growth in Nigeria. Specifically, it aims to assess the magnitude and direction of this relationship, shedding light on whether the surge in government expenditure has yielded commensurate gains in economic prosperity. Through rigorous examination and empirical analysis, this study endeavours to provide insights that inform evidence-based policymaking and contribute to the discourse on economic development strategies in Nigeria. Ultimately, understanding the nuanced relationship between government spending and economic growth is paramount for crafting effective policies that foster sustainable development and enhance the well-being of Nigeria's populace.

Following the introductory section, section 2 presents a review of relevant literature on the link between government size and economic growth. Section 3 discussed the estimation procedure and data used for the study while section 4 presents the empirical results. Finally, section 5 discourses the conclusion and policy recommendations of the study.

REVIEW OF RELATED LITERATURE

The theoretical link between government size (measured by government expenditure to GDP) and economic growth is discussed in the literature within these three contending views (Wagner`s law of increasing state activity, Peacock and Wiseman, and Musgrave). Wagner's law

Adolf Wagner (1911) proposed a law concerning government spending in relation to economic growth. The law states that "as the economy develops over time, the activities and the function

of government increases". Wagner came about this pronouncement after he had studied and compared different countries at different times, and came to the conclusion that the activities of both central and local governments increase over time as the societies in which the governments are also progress. In essence, Wagner proposed a positive relationship between economic growth and government size. Peacock and Wiseman (1961) on the other hand studied the behaviour of public expenditure in the United Kingdom over time. They validated Wagner's law and also found that public expenditures increase over time in a non-uniform manner, depicted by a series of peaks and lows. The peaks and lows recorded in the progression of public expenditure signify periods of instability in the economy, which are caused by social and economic changes, such as wars. This was the basis for the displacement hypothesis. According to Peacock and Wiseman, "The rise in public expenditure greatly depends on revenue collection" Also, "economic development results in substantial revenue to the government, which enables them to increase public expenditure". This was the case when the government increases tax rates so as to gather resources for war expenses. The increased tax rates if maintained after the war, will increase government revenue thereby providing an avenue to increase public expenditure. Lastly, Musgrave (1969) provided another theory of public expenditure which is based on the structure of the subject economy. He posited that in the attempt of developing economies to bridge the infrastructural gap evident in their economies, there will come a time when the private sector becomes improved and more capable to provide such goods, while the public sector size shrinks and reduces government expenditure.

Summarily, from the theories studied above, it could be deduced that economic theory has posited a link between government expenditure and economic growth. Empirically a lot of studies have been carried out concerning the relationship between government size and economic growth. However, there is still no consensus on the direction and the exact nature of the relationship that exists between the variables, as divergent findings have been reported by different studies.

Among the early studies, Ram (1986), conducted a study on government size and economic growth, which was based on a two-sector production function framework and used time series data of 115 countries from 1960 to 1980, OLS regression was used to find out that government size had a positive effect on economic performance and growth. Also, Grossman (1988), in his study of government and economic growth conducted on the United Kingdom found out that an increasing government size contributes positively to economic growth, even though inefficiencies offset the contributions. Vedder and Gallaway (1998), in their study of government size and economic growth in the United States, United Kingdom, Canada, Denmark, Sweden and Italy, used the OLS regression and found that the growth of government size increases output in new economies. In the same vein, Terasawa (1998), analysed the relationship between government size and economic growth in the G7 countries with particular interest on Japan`s government reforms. Graphical methods were used to analyse empirical data and concluded that smaller government sizes correlate with faster economic growth, smaller unemployment and lower inflation rates in the countries.

Conversely, studies like Landau (1986), who carried out a study on government and economic growth in Less Developed Countries (LDCs) which was based on a simple production function framework, found a strong negative effect of per capita GDP on the rate of growth through the use of OLS regression. Likewise, Bairam (1990), found that an increase in government expenses lead to decreasing economic growth in 11 of the 20 African countries studied. The findings of Barro (1991) also indicated that the proportion of government expenses to total

internal production posed a negative impact on economic growth. In another study by Guseh (1997), the relationship between government size and economic growth in developing countries was investigated via a political economy framework. The fixed effect panel regression model was employed to analyse data on 59 middle-income developing countries from 1960 to 1985. It was found that growth in size negatively affects economic growth in the developing countries. Mixed results were also reported by some studies. For instance, Sheehey (1993), in his cross-country study covering 102 countries, found out from his regression results that different categories of government expenditure had different effects on economic growth, ranging from significantly positive to significantly negative, depending on the relative size of government and level of per capita GDP.

Subsequently, studies on government size and economic growth began to also focus on the magnitude and direction in addition to the nature and existence of a relationship between the variables. As such, more conflicting conclusions have been reported by different studies using different methods and techniques. For example, Ramayandi (2003) modified and adopted Kweka and Morrisey (1991) that was built on the growth accounting model of Lin (1994), and found out through the ECM analysis that government size affected economic growth negatively in Indonesia during the study period of 1969 to 1999.

Kustepeli (2005) adapted a growth model from Anaman (2004) which was derived from the neoclassical production function, and carried out a panel data analysis on the relationship between government size and economic growth in 13 selected countries, which suggested that relatively small government sizes reduce economic growth, while medium sized governments affect economic growth positively.

Abnoori and Nademi (2010) modified and adopted the two-sector production function by Ram (1986) to analyse government size threshold and economic growth in Iran. A non-linear relationship was confirmed between government size and economic growth through the Armey curve methodology. A threshold size of 34.7%, 23.6% and 8% were estimated for government total expenditure, government consumption expenditure and government investment expenditure as their share in GDP respectively.

Herath (2010), based his study on the new growth theory, and used the OLS estimation technique to investigate the relationship between government size and economic growth in Sri Lanka. It was found that government size correlates positively with economic growth, while excessive government expenditure correlates with negative economic growth. The study was later updated in 2012 to discover a non-linear relationship between government size and economic growth. Also, an optimal government expenditure as a percentage of GDP was estimated at approximately 27%, while actual expenditure as a percentage of GDP stood at 25% in 2009.

Afonso and Jalles (2011) constructed a growth model which was motivated by the Armey curve and Guseh (1997) to carry out a panel analysis on economic performance and government size of 108 countries from 1970 to 2008. The result shows a negative effect of the size of government on growth.

Keshtkaran et al (2012) adopted a bivariate and tri-variate framework to analyse the relationship between government size and economic growth in Iran. The VAR model, Johansen test, Regressive Distributed Lag model were employed test for long run relationship while the

ECM was used for short run analysis and the Wald coefficient was employed for bivariate and trivariate causality testing. A negative relationship was found between government size and economic growth. A one-way causality was also found from government size to economic growth both in the long run and short run. Also, when either unemployment rate or oil revenue was added as a third variable, the relationship still remained negative.

Mehdi and Shoorekchali (2012) investigated the impact of government size on economic growth in Italy. Smooth transition regression was conducted on annual data from 1960 to 2009. Government size was found to have a significant negative effect on economic growth in both regimes. A threshold government size was also determined at 20.60%.

Altunc and Aydin (2013) carried out a study on the relationship between optimal size of government and economic growth with empirical evidence from Turkey, Romania and Bulgaria. The study which was based on the Armey curve proposed by Richard Armey (1995) employed the ARDL bounds testing approach to find that the government size of all three countries has exceeded their optimal government size as at the period of the study (1995-2011). Tabassum (2014) also based his study on the Armey curve. The OLS regression estimates confirmed a nonlinear relationship between government size and economic growth in Pakistan. Also, an optimal government size of 19.3% was estimated, while actual government size was found to be at 21.4% in the study year. In a similar analysis, Zareen and AbdulQayyum (2014), adapted the study of Barro (1990) and used the VAR methodology to conclude on a negative and significant relationship between government size and economic growth in Pakistan.

Ahmad and Othman (2014) premised their study of optimal size of government and economic growth on the endogenous growth theory and adopted the ARDL bounds testing technique to identify a non-linear relationship between government size and economic growth in Malaysia for the study period of 1970-2012. An optimal government expenditure percentage was estimated at approximately 16.32%.

Asimakopoulos and Karavias (2015) based their study on the endogenous growth model and used a generalised non-linear panel GMM approach to carry out a dynamic panel threshold estimation. The result of the estimation suggested a statistically significant non-linear relationship between government size and economic growth in the 129 countries studied. Also, an optimal threshold level of government size was reported to be at 18.04%. The results remained statistically significant when the sampled countries were split into developing and developed countries.

Aleksandrovich and Upadhyaya (2015), examined three OECD countries; USA, Canada and the United Kingdom, by developing a standard growth model inspired by the Solow growth model. The model was estimated using an AR (1) term with annual time series data from 1975 to 2012. The findings showed that government size has no significant positive impact on economic growth in the countries, but with negative effects in UK and Canada due to crowding out effects in some cases.

In a study by Pingle and Mahmoudi (2015) presumed that the government size at which economic growth is maximised by both developing and developed countries lies between 17% and 26%. The study also maintained that low income and less developed countries are likely to benefit from an increase in government size, while developed countries will benefit from a reduction in government size to increase economic growth.

Legge (2015) emphasized the role of country diversity in his study of government size and economic growth. The results of the panel regression analysis conducted on data from 166 countries which spans from 1960 to 2011, indicated that a significant negative relationship exists between large government sizes and economic growth in highly diverse countries.

Forte and Magazzino (2016), employed the use of ARIMAX models together with Newey and West`s correction regarding heteroscedasticity and autocorrelation, to find a non-linear relationship existing between government size and economic growth in Italy during the study period of 1861 to 2008.

Ashgari and Heidari (2016) applied the Panel Smooth Transition Regression (PSTR) model in the form of Coubb Douglas equation function as applied in Dar and Amir Khalkhali (2002), to report a positive relationship between government size and economic growth in selected OECD-NEA countries. An optimal government size of 28.27% was estimated for the selected countries.

Sabra (2016), utilised the two-stage least square (2SLS) estimation technique and the Generalised Method of Moments (GMM) system analysis to analyse panel data from eight MENA countries from 1977 to 2013. The results proved an inverse relationship exists between government size and economic growth in the selected countries. It was also discovered that the actual government size has exceeded the optimal government size required for economic growth.

In the African region and the Nigerian perspective, not as much literature exists on the study of government size and economic growth due to country peculiarities and complexities. Mupimpila (1989) examined the relationship between government size and economic growth in Zambia. A two-sector model was adopted from the analysis of Feder (1983) and Ram (1986), and OLS estimation technique was used to estimate the model using Zambian data from 1964 to 1984. Government size was found to be positively related to economic growth in Zambia, mostly due to the role of government in providing socio-economic services.

Guseh (2000) investigated the relationship between government size and economic growth in Liberia. The results obtained from the Pearson correlation estimates indicated that the continuous growth in the size of government could be attributed to a reduction in economic growth during the study period (1960 to 1986).

Adu (2013) employed the ARDL and the OLS estimation techniques on Ghanaian data spanning 1970-2010, and is of the opinion that government aggregate expenditure exerts a positive and significant impact on economic growth in the long run, but a negative effect in the short run. Also, he noted that recurrent expenditure contributes to economic growth positively, while capital expenditure contributes to economic growth negatively both in the short run and the long run. An optimum recurrent expenditure level of 12.89% should be maintained to maximise growth.

Wanju, Khobai and Roux (2017) estimated three panel regression models to examine the relationship between government size and economic growth in 27 OECD countries, 50 African countries and 77 OECD and African countries. The optimum government size for the 27 OECD countries was 36.61%, 15.61% for the 50 African countries and 21.13% for the 77 OECD and

African countries. The actual government sizes of the countries fall below the optimum level, which causes low economic growth.

In Nigeria, the literature on government size and economic growth took off with the work of Aigbokan (1996), who evaluated the effect of government size on economic growth from 1960 to 1993. Special emphasis was laid on the impact of the Structural Adjustment Programme (SAP). A simple growth equation was estimated using regression analysis and was augmented by Granger causality testing, to report a bi-directional causality between total expenditure and national income.

Oriakhi and Arodeye (2013) established a long run relationship between government size and economic growth in Nigeria. The study examined time series data from 1970 to 2010, using a vector auto regression model. The results from the forecast error variance decomposition highlighted that variation in economic growth in Nigeria result from internal shocks, government size and real GDP per head innovations.

Alternately, Muse, *et al.* (2013) maintained that there is no long run relationship between federal government expenditure and real per capita GDP, as confirmed by co-integration results carried out on time series data from 1961-2011. Also, the Toda and Yamamoto (1995) Granger non causality test in the context of vector autoregressive model proved that economic growth did not lead to an increase in government expenditure (Wagner`s law does not hold in Nigeria) during the study period. The VAR causality test however weakly supports that government expenditure affects per capita GDP in the short run.

Nwaogwugwu and Alenoghena (2018) examined government size and growth in Nigeria for the period of 1970 to 2014. The study reported to have found long run cointegration between the variables, while short run causality was insignificant.

Onifade, *et al.* (2020) applied the Pesaran`s ARDL approach to investigate the impact of government expenditure on economic growth in Nigeria from 1981 to 2017. Their findings suggested the existence of a level relationship between public spending indicators and economic growth in Nigeria.

Aluthge, *et al.* (2021) investigated the impact of government expenditure on economic growth in Nigeria from 1970 to 2019 using the autoregressive distributed lag (ARDL) model. The study found out that capital expenditure has positive and significant impact on economic growth both in the short run and the long run, while recurrent expenditure has no significant impact on economic growth both in the short run and in the long run.

Kolawole (2022) examined the relationship between government size and economic growth in Nigeria amidst the backdrop of expanding federal government size and rising debt levels. Utilizing the Johansen co-integration technique on time series data spanning from 1981 to 2020, the study reveals a complex interplay between government expenditure and economic growth. While expenditure on transfers is found to Granger-cause economic growth, a reciprocal relationship is observed between economic growth and expenditure on social and community services. Notably, no causality is established between economic growth and other components of government expenditure, highlighting the nuanced nature of their relationship. Disaggregated analysis further unveils both positive and negative associations between government size and economic growth, emphasizing the importance of targeted fiscal policies.

The study underscores the necessity for evidence-based policymaking to navigate fiscal challenges and foster sustainable economic development in Nigeria. Also, Ekpo, Ekere, and Okon (2022) explored the relationship between government expenditure and economic growth in Nigeria, amidst divergent views among economists. Utilizing a modified aggregate production model and the ARDL approach, the analysis covers the period from 1981 to 2018. Results indicate a long-run relationship between total government expenditure and economic growth, with government spending positively impacting growth, in line with Keynesian theory. Granger causality tests reveal a uni-directional causal relationship from economic growth to government expenditure, consistent with Wagner's theory.

From the literature reviewed, it can be deduced that many researchers and economic analysts hold divergent views on the role of government size on economic growth. While some studies like that of (Ram, 1986; Grossman, 1988; Vedder and Gallaway, 1998; Herath, 2010; Facchini and Melki, 2011; Ferris, 2013; Adu, 2013; Oriakhi and Arodeye, 2013; Ashgari and Heidari, 2016) are of the opinion that government expenditure foster growth and development in an economy, others like (Landau, 1986; Bairam, 1990; Barro, 1991; Guseh, 1997; Ramayandi, 2003; Afonso and Jalles, 2011; Mehdi and shoorekchali, 2012; Leggge, 2015) are of the opinion that government expenditure is detrimental to economic growth. Study like Muse, *et al.* (2013) found no relationship between government spending and economic growth. Therefore, there is no consensus as far as the impact of government size on economic growth is concerned.

Studies conducted on the correlation between government size and economic growth in Nigeria by researchers such as Aigbokan (1996), Oriakhi and Arodeye (2013), Muse et al. (2013), and Kolawole (2022) have presented divergent findings, possibly due to the utilization of different estimation methodologies. The varied conclusions drawn from these studies can be attributed to the distinct econometric techniques employed, emphasizing the significance of methodological choices in empirical research. This underscores the necessity for rigorous and standardized methodologies to accurately analyse the relationship between government size and economic growth in the Nigerian context.

METHODOLOGY OF THE STUDY

Theoretical Framework

The framework begins with the typical Solow growth model, which accounts for knowledge in the production process. The model is as follows:

$$Y_t = f(K_t L_t A_t) \qquad 3.1$$

Where Y is the rate of growth of output (K) is capital stock, A is improvement in knowledge, L is labour, t is time.

As inspired by Guseh (1997), the model could be augmented to include aggregate government size (G) to analyse the impact of government in the production process. Government size in this context refers to the percentage share of total government expenditure to GDP. Thus equation 3.1 can be rewritten as:

$$Y_t = f(K_t L_t A_t, GT_t) \quad 3.2$$

Where GT is government size measured as total government expenditure as a ratio of total output. Based on equation (3.7), the estimable equations are:

$$Y_t = \alpha_0 + \alpha_1 K_t + \alpha_2 L_t + \alpha_3 A_t + \alpha_4 GT_t + \varepsilon_t \quad 3.3$$

From equation 3.3, $\alpha 0$, $\alpha_4 > 0$, which means that total government expenditure (GT) is expected to be positively related to the rate of growth of output (Y).

Estimation Technique

The Ng and Perron (2001) unit root test is used to ensure data stationarity. The test is based on Perron and Ng's (1996) PP tests, but uses Elliott, Rothenberg, and Stock's (1996) GLS detrending procedure to create a more efficient version. The modified test is more efficient because it does not exhibit severe size distortions for errors with large MA or AR roots, as were found in the PP (1998) tests. Furthermore, when the autoregressive term is close to unity, the Ng and Perron (2001) test outperforms the PP tests. Following the unit root test, the Johansen co-integration test is used to assess the long-term relationship between the variables being studied.

Following the co-integration test, the study uses fully modified ordinary least squares (FMOLS) to assess the impact of government size and other variables on economic growth. Phillips and Hansen (1990) proposed that the FMOLS has the following advantages over the OLS:

i. the method provides an asymptotically unbiased and fully efficient estimate for regressors, accounting for serial correlation and endogeneity caused by co-integrating relationships.
ii. According to Phillips (1995), optimal coefficients for co-integrating regressions are obtained when the variables in the model are fully ranked (integrated of order 1).

Sources of Data

Annual time series data 1981 to 2021 were collected from the Central Bank of Nigeria Statistical Bulletin (2021) and CBN Annual Statement of Account various years. The variables of interest are: the rate of growth of GDP, Gross capital formation, A is tertiary enrolment, L is labour force, and GT is government size measured as total government expenditure as a ratio of GDP.

EMPIRICAL RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics presented in Table 4.2, revealed that Nigeria's RGDP growth rate averaged 3.02% for the four decades. This implies that the Real GDP in Nigeria for the period under review is less than 5% despite the proceeds realised from the oil exploration and the non-oil products. This may be as a result of the high importations of goods and services and poor

outputs in the non-oil sectors (solid mineral, agricultural among others) which makes the increase of the GDP growth rate slower than what is expected. Further, this revealed the high level of the cost of governance which goes largely to recurrent expenditure and not capital expenditure as shown in the value of GT which represent the level of the ratio of government expenditure to GDP is 17.28. Considering the condition for normality test using the descriptive statistics output, it worthy to note that all the variables have a positive Jarque-Bera probability value that is not too large. This then prompt the adoption of the Ng-Perron unit root test to attest the genuineness of it abnormal distribution behaviour and stationarity.

Table 4.2a Descriptive Statistics for the Endogenous (RDGPGR) and Exogenous Variables.

	RGDPGR	**GT**	**L**	***K***	**A**
Mean	3.02615	8.444183	67.40125	7.162172	29.6912
Median	3.698	8.150014	60.12	5.0425	31.87288
Maximum	15.329	17.28619	96.67	18.8	55.02128
Minimum	-13.128	5.089349	53.91	1.410541	7.522695
Std. Dev.	5.401615	2.528837	15.22098	4.942183	11.32794
Skewness	-0.80101	1.494212	1.213213	0.884109	-0.193071
Kurtosis	4.501258	5.736283	2.627655	2.705405	3.398855
Jarque-Bera	32.1348	109.4528	40.17453	23.20093	3.403207
Probability	0	0	0	0.000009	0.182391
Sum	484.184	1351.069	10784.2	1145.947	4750.592
Sum Sq. Dev.	4639.214	1016.808	36836.83	3883.602	20403.25
Observations	160	160	160	***160***	160

Source: Author Computation.

Other statistics like the row under kurtosis in the above table, measures the flatness and Peakness of the distribution. For a distribution to be considered normally distributed, it should have a kurtosis value of 2.5 and above. Hence all the variables under study have above 2.5 digit of kurtosis. Therefore, the Ng-Perron unit root test is inevitable.

Unit Root Tests

From the Ng-Perron unit root table (Table 4.3a) it was observed that all the variables are not stationary at level. This is because the MSB and MPT values of the critical values at 1% and 5% were lower than the Asymptotic Ng-Perron MSB and MPT values. While the critical values of MZa and MZt at 1% and 5% are greater than the Ng-Perron values in absolute terms. The variables became stationary after first difference. This implies that all the variables are integrated of order one i.e (I (1)).

Table 4.3: Unit Root (Ng-Perron) for all the Variables at levels						
Variable	Asymptotic Critical Values	MZa	MZt	MSB	MPT	Accept or reject Null Hypothesis.
RGDPGR (Y)	1%	-13.8000	-2.58000	0.17400	1.78000	
	5%	-8.10000	-1.98000	0.23300	3.17000	
	Ng-Perron T-Statistics	-0.76395	-0.56566	0.74044	27.9935	**Accept**
GT	1%	-13.8000	-2.58000	0.17400	1.78000	
	5%	-8.10000	-1.98000	0.23300	3.17000	
	Ng-Perron T-Statistics	**-6.88595**	**-1.82895**	**0.26561**	**3.65461**	**Accept**
L	1%	-13.8000	-2.58000	0.17400	1.78000	
	5%	-8.10000	-1.98000	0.23300	3.17000	
	Ng-Perron T-Statistics	**-0.90290**	**-0.60414**	**0.66912**	**23.2704**	**Accept**
K	***1%***	*-13.8000*	*-2.58000*	*0.17400*	*1.78000*	
	5%	*-8.10000*	*-1.98000*	*0.23300*	*3.17000*	
	Ng-Perron T-Statistics	**-2.7451**	**-0.50744**	**0.29674**	**3.98968**	***Accept***
A	1%	-13.8000	-2.58000	0.17400	1.78000	
	5%	-8.10000	-1.98000	0.23300	3.17000	
	Ng-Perron T-Statistics	**-3.64430**	**-1.34646**	**0.36947**	**6.72400**	**Accept**

Source: Author's compilation. ***** Indicate level of significant at 1%**. ** Indicate** level of significant at 5%.

Cointegration Tests

This is done to determine the existence of a long-run relationship which will enable for the estimating of the long-run coefficients using FMOLS since all the variables are integrated of order (1). Thus, the long-run equilibrium relationship between the variables is examined using the Johansen and Juselius (1990) cointegration test, while the Fully Modified Ordinary Least Square (FMOLS) as proposed by Phillips and Hansen (1990) is used to determine the long-run impacts/coefficients of the selected variables on Nigeria's economic growth rate. In adopting these procedures, we first determine the optimal lag length of the Vector Autoregressive (VAR) model using the AIC criteria.

Table 4.4. Johansen Cointegration Test

No. of Block	Trace				Max-Eigen Value			
Hypothesized No. Cointegration. Equation	**Trace statistic Value**	**0.05 Critical value**	**prob.**	**No. of Coint. Equation**	**Max-Eigen statistics Value**	**0.05 Critical value**	**prob.**	**No. of Coint. Equation**
None*	108.7023	95.75366	0.0105	3	42.51923	40.07757	0.0446	3
At most 1*	72.18303	69.81889	0.1297		36.36435	33.87687	0.2990	
At most 2*	56.81867	47.85613	0.3100		29.63293	27.58434	0.6967	
At most 3	20.18574	29.79707	0.2883		12.84129	21.13162	0.5634	
At most 4	12.34445	15.49471	0.2552		7.022829	14.26460	0.4864	
At most 5	7.321619	3.841466	0.0684		5.321619	3.841466	0.0684	
Source: Author's Computation. ** Denotes rejection of the hypothesis at the 0.05 level*								

The Johansen cointegration test is estimated using a lag length of 5. The results revealed that the trace test indicated 3 cointegrating equation, while the Maximum eigenvalue test suggests 3. This implies that a long-run equilibrium relationship between the real GDP growth rate and the selected variables (Government size which is proxied by the ratio of government total expenditure to GDP, private investment, labour participation, savings rate and trade openness percentage of GDP).

The FMOLS Results and Diagnostic Test

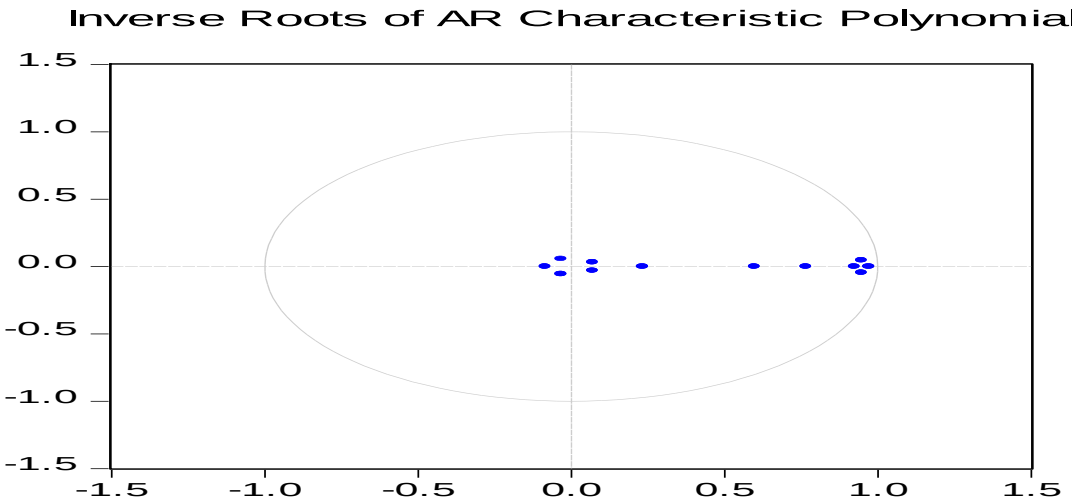
Table 4.5: The result of the Fully Modified Ordinary Least Squares (FMOLS)

VARIABLES	Dependent Variable: Y (Real Gross Domestic Product Growth Rate (RGDPGR)		
	Coefficient	**t-Statistic**	**Prob.**
Constant	-12.91902	-2.204977	0.0289
GT	0.582223**	2.048212	0.0422
L	0.222778*	3.033365	0.0028
A	0.052206	0.353998	0.7238
K	0.182911**	2.485602	0.0140
R-squared	**0.684373**		
Adjusted R- Squared	**0.564254**		
Source: Author's Compilation. * Significant at 1%. ** significant at 5%			

The FMOLS result presented in Table 4.5 revealed that Government size (GT), has a positive and significant impact on dependent variable. Also, labour participation and K (proxied by gross capital formation) have a positive and significant impact on the dependent variable. However, the variable that has the most impact is government size with 5.82% contribution to every 10% increase. This depicts that whenever, government fails to support her institutions in terms of funding that effect would be negative on the country's real GDP growth rate, thus invariably affecting the living standard of the people. On the contrary, A (proxied by tertiary enrolment) has a positive but non-significant contribution to the dependent variable in the long-run. In indicating that growth in knowledge has not impacted meaningfully on growth in Nigeria.

Diagnostic Test for model 1.

First equation AR root test



Source: Author's Computation **Figure 4.5.1.1.**

The figure above shows that the AR satisfy the condition for stability, as the values do not lie outside the circle (i.e. they are less than one).

VAR residual Autocorrelation LM test.

Table 4.5.1.2 VAR residual Serial correlation LM Test:

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	17.32819	36	0.9964	0.474614	(36, 591.2)	0.9964
2	11.99232	36	0.9999	0.327022	(36, 591.2)	0.9999
Source: Author's Computation.						

The result of the VAR residual autocorrelation test (table 4.5.1.2) examines the relationship between the residual of the variables and their lagged version over various time intervals. Table

4.5.1.2 shows no serial autocorrelation in the residual since the probability values of the observed LRE and Roa F-statistics are greater than 5%. (0.9964 and 0.9999). Thus, the model can be said to have no serial autocorrelation.

Concluding Remark and Policy implication

This study examines the impacts of government size (measured as government spending as a ratio of GDP) on Nigeria's economic growth between 1981 and 2021, utilizing the FMOLS estimation technique. The Johansen cointegration results indicate a statistically significant long-run relationship among economic growth, government size, K (proxy by gross capital formation), labour force, and knowledge. Specifically, the FMOLS results indicate that government size, labour force, and K (proxy by gross capital formation) positively impacted economic growth, with government size having the highest impact. However, growth in knowledge (proxied by tertiary enrolment) has not impacted meaningfully on growth in Nigeria.

Based on the findings of this study, which highlight the significant impact of government size on Nigeria's economic growth, policymakers should consider the following actionable recommendations to optimize economic development:

1. Optimal Government Spending Allocation: Recognizing the substantial positive impact of government size on economic growth, policymakers should prioritize efficient allocation of government expenditure towards productive sectors such as infrastructure development, education, healthcare, and technology. This entails prudent budgetary management to ensure that government spending effectively supports long-term economic growth objectives.
2. Investment in Human Capital: Given the positive influence of the labor force on economic growth, policymakers should focus on enhancing human capital development through investments in education, training, and skills acquisition programs. By prioritizing initiatives that improve workforce productivity and employability, Nigeria can harness its demographic dividend to drive sustainable economic growth.
3. Promotion of Capital Formation: The study underscores the importance of gross capital formation (K) in driving economic growth. Policymakers should implement strategies to foster a conducive environment for private sector investment and entrepreneurship. This includes reducing regulatory barriers, enhancing access to finance, and incentivizing domestic and foreign investment in critical sectors to boost capital accumulation and productivity.
4. Knowledge Economy Development: Despite the limited impact observed in the study, policymakers should not overlook the potential of knowledge-based industries in driving economic growth. To harness the benefits of a knowledge economy, concerted efforts are needed to enhance research and development (R&D) capabilities, promote innovation, and facilitate technology transfer and adoption across sectors. Additionally, investments in tertiary education and vocational training programs can further strengthen Nigeria's knowledge base and foster innovation-driven economic growth.
5. Evidence-Based Policy Implementation: To ensure effective policy formulation and implementation, policymakers should prioritize evidence-based decision-making. Continued monitoring and evaluation of policy interventions are essential to assess their impact on economic growth and make necessary adjustments to align with evolving socioeconomic dynamics.

By adopting these policy recommendations, Nigeria can leverage the insights garnered from this study to foster an environment conducive to sustained economic growth.

REFERENCE

Abnoori, E. and Nademi, Y. (2010). Government size threshold and economic growth in Iran. Department of Economics, University of Mazandaran, Babolsar-Iran

Adu, F. (2013). Government size and economic growth in Ghana. Department of Economics, Kwame Nkumah University of Science and Technology, Kumasi

Afonso, A. and Jalles, J.T. (2011). Economic performance and government size. European Central Bank working paper No.1399

Ahmad, R. and Othman, N. (2014). Optimal size of government and economic growth in Malaysia: Empirical Evidence. Persidangan Kebangsaan Ekonomi Malaysia ke-9 (PERKEM ke-9).

Aigbokhan, B. E. (1996). Government size and economic growth: The Nigerian experience in beyond adjustment: Management of the Nigerian economy. Proceedings of the 1996 annual Conference of the Nigerian Economic Society

Aleksandrovich, A. and Upadhyaya, K.P. (2015). Government size and economic growth: Evidence from selected OECD countries. *International Journal of Economics and Finance*, 7(5) 38-43

Altunc, O.F. and Aydin, C. (2013). The relationship between optimal size of government and economic growth: Empirical evidence from Turkey, Romania and Bulgaria. Lumen International Conference. Logos Universality Mentality Education Novelty, *Procedia - Social and Behavioral Sciences*, 92 66 –75

Aluthge, C. Jibir, A. and Abdu, M. (2021). Impact of government expenditure on economic growth in Nigeria, 1970 – 2019. *CBN Journal of Applied Statistics*, 12(1) 139 - 174

Armey, R. (1995). The freedom revolution. Washington, D.C.: Regency 164 Publishing Co.

Azubike, J.U.B. (2009). Challenges of tax authorities, tax payers in the management of tax reform processes. *Nigeria Account*, 42(2) 36-42.

Bairam, E. (1990). Government size and economic growth: The African experience 1960-85. *Applied Economics*, 22 1427-35

Barro, R.J. (1990). Economic growth in a cross section of countries. *Quarterly Journal of Economics,* 106(2) 407- 443

Barro, R.J. (1991). Economic growth in a Cross Section of Countries. *Quarterly Journal of Economics,* 106(2) 407- 443

Central Bank of Nigeria (CBN). Annual Statistical Bulletin. *Various issues.*

Dar, E. A. and Khalkhali, A. S. (2002). Government size, factor accumulation, and economic growth: Evidence from OECD countries. *Journal of Policy Modelling*, 24 679-692

Ekpo, U.N. Ekere J. D., and Okon, I. M. (2022). Government Expenditure and Economic Growth in Nigeria: Aggregate Level Analysis using the Bound Test Approach. International Journal of Developing and Emerging Economies, 10(1), 1-20.

Ferris, J. S. (2013). Government size, government debt and economic performance with particular application to New Zealand. Department of Economics, Carlton University, Ottawa Ontario Canada

Forte, F. and Magazzino, C. (2011). Optimal size of government and economic growth in EU Countries. *Journal of Analytical and Institutional Economics*, XXVIII, (3) 295-321.

Grossman, P.J. (1988). Growth in government and economic growth: The Australian experience. *Australian Economic Papers*, 27 33-43

Guseh, J.S. (1997). Government size and economic growth in developing countries: A political-economy framework. *Journal of Macro Economics* 19(1) 175-92

Guseh, J.S. (2000). Government size and economic growth: The case of Liberia. *African Social ScienceReview*,1Iss.1, Article3

Herath, S. (2010). The size of the government and economic growth: An empirical study of Sri Lanka. (SRE Discussion Papers, 2010/05): WU Vienna University of Economics and Business. LVII (194)

Ibrahim, T M. (2018). Does public capital influence output growth? Further evidence from Nigeria. MPRA paper No. 88635

Johansen, S. (1988). Statistics analysis of cointegration vectors. *Journal of Econometrics, Dynamics and Control*,12(3) 231 -254

Kolawole, B.O. (2022). Government Size and Economic Growth in Nigeria: An Assessment.

Journal of Management and Economic Studies, 4(3), 351-366.

Keshtkaran, S., Piraee, K. and Bagheri, F. (2012). The relationship between government size and economic growth in Iran: Bivariate and trivariate causality testing. *Journal of Economics and Behavioural Studies*, 4(5) 268-276

Keynes, J.M. (1936). *The general theory of employment, interest and money*. London: Palgrave Macmillan

Landau, D. (1983). Government and economic growth in the less developed countries: An empirical study for 1960-1980: The University of Chicago Press, 35(1) 35-75.

Landau, D. (1986). Government and Economic Growth in the less developed countries: An empirical study for 1960-1980. *Economic Development and Cultural Changes*, 35 35-37.

Legge, S. (2015). Government size and economic growth: The role of country diversity. Department of Economics, Bodanstrasse 8, CH-9000 St.Gallen, Switzerland

Mupimpila, C. (1989). Government size and economic growth: The case of Zambia. Retrospective Theses and Dissertations.17142

Muse, B.O. Olorunkele, K. and Alimi, R.S. (2013). The effect of federal government size on economic growth in Nigeria 1961-2011. *Developing Country Studies*, 3(7) 68-76

Ng, S. and Perron, P. (2001). Lag length selection and the construction of unit root test with good size and power. *Econometrica*, 69(6) 1519 – 1554

Nwaogwugwu, I.C. and Alenoghena, R.O (2018).Government size and economic growth in Nigeria. *Scientific Economic Journal*, 209

Ogundipe, A. and Oluwatobi, S. (2014). Government spending and economic growth in Nigeria: Evidence from disaggregated analysis. *Journal of Business Management and Applied Economics*, 2(4)

Onifade, S.T. cevik,S. Erdogan, S. Asongu, S. and Bekun, F.C.(2020). An empirical retrospect of the impacts of government expenditures on economic growth:new evidence from the Nigerian economy. *Journal of Economic Structures*. 9:6

Oriakhi, D.E. and Arodeye, L.N. (2013). The government size – economic growth relationship: Nigerian econometric evidence using a vector autoregression model. *International Journal of Business and Management*; 8 (10)

Peacock, A.T. and Wiseman, J. (1961). The Growth of Public Expenditure in the United Kingdom, Princeton: Princeton University Press.

Pingle, M. and Mahmoudi, M. (2015). Economic growth and government size.

Ram, R. (1986). Government size and economic growth: A new framework and some evidence from cross-section and time series data. *American Economic Review*, 76, 191-203.

Ramayandi, A. (2003). Economic growth and government size in Indonesia: Some lessons for the local authorities. Working Paper in Economics and Development Studies, Padjadjaran University

Sabra, M.M. (2016). Government size, country size, openness and economic growth in selected MENA countries. *International Journal of Business and Economic Sciences in Applied Research*, 9(1) 39-45

Sheehey, E. (1993). The effect of government size on economic growth. *Eastern Economic Journal*, 19 (3) 321-328.

Shoorekchali, M. (2012). The impact of government size on economic growth: A case study in Italy. *Australian journal of Basic & Applied sciences*, 6(9) 616-621

Smith, A. (1776). An Inquiry into the nature and causes of wealth of nations. Library of

Economics and Liberty.

Solow, R. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70 65-94.

Tabassum, A. (2014). Size of government and economic growth: A non linear analysis. *International Journal of Technology and Research*, 75-78

Terasawa, K.L. and Gates, W. R. (1998). Relationships between government size and economic growth: Japan's government reforms and evidence from OECD. *International Public Management Journal*, 1 (2) 195-223.

Wagner, A. (1863). Grundlegun de PolitischenOkonomie.

Wanju, S.L., Khobai, H. and Roux, P.L. (2017). Government size and economic growth in Africa and the Organization for Economic Cooperation and Development Countries. *International Journal of Economics and Financial Issues*, 7(4) 628-637.

Vedder, R.K. and Gallaway, L.E. (1998). Government size and economic growth. Joint Economic Committee, Washington, DC