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MODELLING DISAGGREGATED GOVERNMENT EXPENDITURE AND MANUFACTURING SECTOR PERFORMANCE NEXUS AND THEIR INFLUENCE ON ECONOMIC PERFORMANCE

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Abstract

The study investigates the influence of manufacturing sector performance and disaggregated government expenditure on economic performance in Nigeria. Government expenditure is disaggregated into social and community services and economic services. The study employed and makes use of time series data from 1981 to 2020. Data on manufacturing sector performance, government expenditure on social, government expenditure on community services and economic services, foreign direct investment, interest rate, population and economic growth were sourced from Central Bank of Nigeria statistical bulletin, World Development Indicators and Nigeria Bureau of Statistics. The Unit root test shows that all variables except foreign direct investment and population are stationary at first difference and the bounds test confirms existence of long run relationship among the variables at 5% significant level. The econometric technique used in estimating the VAR model to run the causality test is the Toda-Yamamoto model while Autoregressive Distributed Lag Model (ARDL) model was the estimation technique used to analyze the main objective of the study to generate short run and long run result. The econometric model estimated reveals that manufacturing sector performance, foreign direct investment, government expenditure on community and social services have a positive and significant impact on economic performance while government expenditure on economic services have a negative and significant impact on economic performance while interest rate does not have a significant impact on economic performance.

Keywords: Manufacturing Sector performance, Government expenditure, Economic growth, Modelling.

1.0 Introduction

In analyzing the concept behind economic growth, it is exigent to describe how manufacturing occurs to be a catalyst for economic growth globally, also industrialization and government expenditure has been conceived as well to be an important tool for stimulating economic growth and development. The role manufacturing sector plays in an economy cannot be overstressed when examining or analyzing economic process (Loto, 2012). According to Olorunfemi (2014), it is unachievable for any economy to attain full development without having a dynamic manufacturing sector. Manufacturing sector has been refers to as the industries and activities that has to do with the transformation of raw materials, substance or goods into a finished or new products.

Manufacturing sector is wide-ranging and it involves activities such as; clothing and textiles, cement and building, electronics, petroleum, food production, chemicals and plastics. Manufacturing sector contributes largely to the entire economy which can even be traced to reduction of income inequality, provision of employment opportunities, provision of goods and services, in showing the relevance of the manufacturing sector to be the foundation and large contributor to economic growth, over the years, Nigeria has put in place different set of strategies and plans which were targeted at stimulating and increasing productivity in the manufacturing sector so as to help boost economic growth in such process. Unfortunately, the strategy collapsed during the oil boom in Nigeria, also during this particular period the manufacturing sector was basically administered in such a way that it rely basically on inputs and raw materials that are imported which can be attributed to poor technological base in the country.

Government expenditure primarily financed by taxes, public borrowings, grants, fees, aids and fines refers to the acquisition of goods and services which are intended to bring into place or create investment and research and infrastructure which are regarded as future benefits. The classification of government expenditure can be recurrent and capital, Capital expenditure refers to the money spent by the government on the development of machinery, equipment, building, health, facilities, education, e.t.c. It also includes the expenditure incurred on acquiring fixed asset like land and investment by the government that gives dividend in future. On the other hand, recurrent expenditure are all government payments other than for capital expenditure.

According to Chude and Chude (2013), when government expenditure high, it can help to stimulate investment, profitability and employment through aggregate demand and through the multiplier effect.

The growth and thus, the contribution of the manufacturing sector to the Nigeria GDP have not been impressive over the years. Regardless of the fact that it has been made clear to the developing countries of the world (including Nigeria), how vital the manufacturing sector is to development of any nation. The manufacturing sector growth and contribution to the GDP of Nigeria in 2019 was 9.06% which grew slightly as against 9.2% in 2018. The contribution of the manufacturing sector to the GDP between 2006 and 2010 was extremely poor as a result of the decay in infrastructure. Although, the manufacturing sector rose a bit from 9.39% in 2006 to 9.57% in 2007 and fell to 8.89%, 7.85%, 7.64% in 2008, 2009 and 2010 respectively (NBS ,2010).

Over the years government expenditure has experienced a tremendous rise. The CBN statistical bulletin shows that from 2006 to 2010 government expenditure increased greatly by 53.59%. In 2006 it was 1,938.00billion(Naira), 2,450.90billion(Naira) in 2007, 3,240.82billion(Naira) in 2008, 3,452.99billion(Naira) and 4,194.58billion(Naira) in 2009 and 2010 respectively. Currently in 2019 government total expenditure increased to 9,714.84 billion(Naira) as against 7,813.74 billion(Naira) in 2018.

The relationship among manufacturing out, government expenditure and economic growth have been analyzed by different studies in literature but no consensus has been reached, some of these study thus include Ademola (2012), Ogiji (2018) and Umofa (2018).

According to Umofa and Nsikan (2018), despite series of strategies being put in place, it was still evident that manufacturing sector in Nigeria has performed below potential and has not been able to help contribute largely to economic growth due to different challenges facing the sector. Ogiji (2018) also investigates how fiscal policy impacts the manufacturing sector output and analyzed that government expenditure significantly affect manufacturing sector output. According to Ademola (2012), government expenditure significantly affects the manufacturing sector and economic growth in Nigeria. Apparently, this implies that government expenditure channeled to enhancing the manufacturing sector will no doubt lead to industralization. Hence, the larger the

number of manufacturing industries the better industrialized the society will be, thereby resulting to employment generation, improvement in the standard of living generally, increase in per capital income, growth in infrastructure, enhancement of manpower development and an overall contribution to the economic growth of the country.

Various studies in literature such as Echekoba and Amakor (2017), Nurudeen and Usman(2010), Ighodaro and Oriakhi (2010) analyzed the impact of government expenditure on the economic growth at several point in time. Many of these studies disaggregated government expenditure into general administration, education, health, defense, communication and social services. In the same vein, Iweriebor, Egharevba and Adegboye (2015) analyzed the effect of government expenditure on the industrial sector. This study, however, aims at assessing the impact of disaggregated government expenditure, manufacturing sector performance on the economic growth of Nigeria. Most of the existing studies focusing on ascertaining the causality among government expenditure, manufacturing sector performance and economic growth in Nigeria is limited. However, studies such as Falade and Olagbaju(2015), Chikelu and Okoro (2019) captures the subject matter in a relatable way to Nigeria, although Falade and Olagbaju (2015) examined the effect of government expenditure on manufacturing sector output in Nigeria with emphasis laid on the capital component of government expenditure. While Chikelu and Okoro (2019) examined the causal relationship between capital expenditure and manufacturing sector growth in Nigeria.

This study therefore intends to contribute to the body of knowledge and existing literature by providing empirical evidence and analysis on this subject matter and shall evaluate the presence of causality among the disaggregated form of government expenditure, manufacturing sector performance and economic growth in Nigeria.

2.0 Literature Review

2.1 Conceptual Review

This section entails the review of different views and opinion on the concepts of Government expenditure, manufacturing sector performance and Economic growth.

2.1.1 Government Expenditure and Economic Growth

In any context, government expenditure includes all expenses incurred by the government. In national income accounting, the purchase of goods and services for immediate use by the government to directly satisfy individuals or collective needs of the society is categorized as government final consumption.

2.1.2 Manufacturing Sector Performance and Economic Growth

Generally, manufacturing has been regarded as a critical tool for enhancing economic growth. In development literature, manufacturing sector serves as a catalyst for the production of goods and services, generation of employment opportunities as well as the enhancement of income earned by economic agents (Olorunfemi, 2013). In similar vein, Kayode (1989) and Libanio (2006) described the manufacturing sector as the heart and engine of economic growth.

2.2 Theoretical Review

2.2.1 Keynesian Theory

The theory developed by Lord J.M Keynes (1936), analyzed the challenge of unemployment equilibrium in contrast to other school of thought. Keynes postulated that the free market economy do adjust by themselves, therefore there is no need for intervention in the market by the government in the economy since that will limit the free flow of activities in the market. Keynesians were of the belief that the driving force of the economy is consumers demand.

2.2.2 Solow Growth Model

This is an exogenous economic growth model in which total GDP growth of an economy is explained by changes in savings rate, population growth rate and the rate of technological progress. Hence, the Solow model can also be referred to as the neo-classical growth model. Solow model further predicts that in the long run, economies converge to their steady state equilibrium and that a sustainable and permanent growth is achievable only through technological progress.

2.4 Empirical Review

Lupu (2018) studies the impact of disaggregated public expenditure on economic growth in the case of 10 selected Central and Eastern European countries. The scope of the study is between 1995 to 2015. The variables used include Real GDP, recurrent and capital expenditure. Using the ARDL approach, the results of the study shows that public expenditures on education and health care have a positive impact on economic growth in all countries studied.

Okere, Okere and Nwaneto (2020) investigates the effect of bank credits on the manufacturing sector output in Nigeria. The scope of the study covered the period 1981-2018.Variables used in the study includes manufacturing sector output, credit to manufacturing sector, bank interest rate and inflation rate. Methodology employed are ARDL bound co-integration test and ECM. Results from the study shows that variables have long relationship and bank credit has a negative and statistically significant relationship with manufacturing output.

Melissa and Dean (2012) examines the effect of public expenditure productivity on manufacturing sector in UUSA cities between 1880-1920. The variables employed includes public expenditure and total factor productivity which serves as proxy for labor productivity. The methodology used in the study is Cobb-Douglas production function. Findings from the study shows positive and statistically significant relationship exists between capital and labor productivity

Afolabi and Laseinde (2019) investigates the Impact of manufacturing sector output on economic growth and presence of long run relationship between economic growth and gross capital formation in Nigeria. The variables investigated in the study are Real GDP as a proxy for economic growth, Manufacturing output, government capital formation as a proxy for government investment expenditure, Agricultural sector output and service sector output . The study covered the period 1981-2018 in Nigeria. The methods employed in the study includes Autoregressive Distributed Lag Model (ARDL), Augmented Dickey Fuller test and Granger causality test. The result of the study shows that manufacturing output has a positive impact on economic growth and a unidirectional causality exists between Economic growth and manufacturing sector output.

Chikelu and Okoro (2019) investigates the causal relationship between capital expenditure and manufacturing sector's growth in Nigeria between 1970-2012. Variables used in the study are manufacturing share of real GDP, capital expenditure, FDI, interest rate and exchange rate. Methodology used are Ordinary Least Square method, Augmented Dickey Fuller test, Johansen co-integration technique, Error correction model and Granger causality test. Result of the study shows that capital expenditure is statistically significant and has a positive effect on manufacturing sector's growth and the causality test shows that capital expenditure granger causes manufacturing sector performance.

Ogodo (2018) examines the impact of manufacturing sector development on economic growth in Nigeria. The variables used are Real GDP, manufacturing sector output, gross fixed capital formation, government expenditure, interest rate and agricultural output. The scope of the study is from 1981-2017. The methods used in the study are Ordinary Least Square (OLS) and Error Correction Model (ECM). The findings of the study shows that manufacturing sector output has no statistical significance on economic growth.

has a negative effect on manufacturing sector output.

Tai (2014) observes the long and short run impact of government spending on inflation in India, Vietnam and Indonesia between 1970-2010.The variables employed are annual inflation rate, annual government expenditure and nominal exchange rate. Methodology employed are Johansen co-integration technique and Vector Error Correction Model. Result from the study shows that government spending has a statistically significant and positive impact on inflation in the long run in all countries.

3.0 Research Methodology

This section explores issues around the sources, measurement, nature and attribute of the data employed in the study. Thereafter, it describes the theoretical and analytical framework as well as the methodology employed in an attempt to give detailed and empirical analysis of the impact of government expenditure, manufacturing sector performance on economic growth.

3.1 Theoretical Model

In the study of Ogbodo (2018) the model used was Real GDP as the dependent variable, manufacturing output, gross fixed capital formation, government expenditure, interest rate and agricultural sector output

as the independent variable and the study was based on the production theory. This model is adopted in the present study because it captures some of the variables to be employed in the study.

3.2 Empirical Model

The model to be estimated is specified in the functional form as

Economic Growth=f (government expenditure, manufacturing sector performance) (3.1)

Introducing the various components of the variables

RGDP=f(MANUVA, GSCOM, GECOSER) *(3.2)*

Introducing other independent variables, the model is specified as

RGDP=f(MANUVA, FDI, GSCOM, GECOSER, INTRATE, POP) (3.3)

The functional specification of the model is specified in the mathematical form as

$RGDP = \beta_o + \beta_1 MANUVA + \beta_2 FDI + \beta_3 GSCOM + \beta_4 GECOSER + \beta_5 INTRATE + \beta_6 POP)$ (3.4)

The mathematical specification of the model is specified in the econometric linear and natural log form as

$lnRGDP_t = \beta_o + \beta_1 lnMANUVA + \beta_2 lnFDI + \beta_3 lnGSCOM + \beta_4 lnGECOSER + \beta_5 lnINTRATE + \beta_6 lnPOP + \varepsilon_t$ *(3.5)*

Real Gross Domestic Product Per Capita (RGDP), Government expenditure on Economic Services(GECOSER), Government Expenditure on Community and Social Services(GSCOM), Manufacturing Value-Added(MANUVA), Interest Rate (INTRATE), Foreign Direct Investment(FDI) β_o=Regression intercept, β_1-β_9= Regression coefficient, ε_t = Error term

3.4 Estimation Technique

In order to analyze the causality among manufacturing sector performance, government expenditure and economic growth. It is expected to run an unrestricted VAR model and then employ it to estimate a granger causality test in order to achieve the aim this study. Hence, the VAR model shall be estimated under the assumption that the variables have long run attributes.

$$\boldsymbol{RGDP_t} = \pi_O + \sum_{i=1}^{q} \pi_{1i}\, RGDP_{t-i} + \sum_{i=1}^{q} \pi_{2i} FDI_{t-i} + \sum_{i=1}^{q} \pi_{3i} GECOSER_{t-i} + \sum_{i=1}^{q} \pi_{4i} GSCOM_{t-i} + \sum_{i=1}^{q} \pi_{5i} INTRATE_{t-i}$$

$$+ \sum_{i=1}^{q} \pi_{6i} POP_{t-i} + \sum_{i=1}^{q} \pi_{7i} MANUVA_{t-i} + \varepsilon_{1t}$$

(3.6)

$$\boldsymbol{FDI_t} = \beta_O + \sum_{i=1}^{q} \beta_{1i}\, FDI_{t-i} + \sum_{i=1}^{q} \beta_{2i} GECOSER_{t-i} + \sum_{i=1}^{q} \beta_{3i} GSCOM_{t-i} + \sum_{i=1}^{q} \beta_{4i} RGDP_{t-i} + \sum_{i=1}^{q} \beta_{5i} INTRATE_{t-i}$$

$$+ \sum_{i=1}^{q} \beta_{6i} POP_{t-i} + \sum_{i=1}^{q} \pi_{7i} MANUVA_{t-i} + \varepsilon_{2t}$$

(3.7)

$$\boldsymbol{GECOSER_t} = \alpha_O + \sum_{i=1}^{q} \alpha_{1i}\, GECOSER_{t-i} + \sum_{i=1}^{q} \alpha_{2i} GSCOM_{t-i} + \sum_{i=1}^{q} \alpha_{3i} FDI_{t-i} + \sum_{i=1}^{q} \alpha_{4i} RGDP_{t-i} + \sum_{i=1}^{q} \alpha_{5i} INTRATE_{t-i}$$

$$+ \sum_{i=1}^{q} \alpha_{6i} POP_{t-i} + \sum_{i=1}^{q} \pi_{7i} MANUVA_{t-i} + \varepsilon_{3t}$$

(3.8)

$$\boldsymbol{GSCOM_t} = \phi_O + \sum_{i=1}^{q} \phi_{1i}\, GSCOM_{t-i} + \sum_{i=1}^{q} \phi_{2i} FDI_{t-i} + \sum_{i=1}^{q} \phi_{3i} RGDP_{t-i} + \sum_{i=1}^{q} \phi_{4i} GECOSER_{t-i} + \sum_{i=1}^{q} \phi_{5i} INTRASTE_{t-i}$$

$$+ \sum_{i=1}^{q} \phi_{6i} POP_{t-i} + \sum_{i=1}^{q} \phi_{7i} MANUVA_{t-i} + \varepsilon_{4t}$$

(3.9)

$$\boldsymbol{INTRATE_t} = \epsilon_O + \sum_{i=1}^{q} \epsilon_{1i}\, INTRATE_{t-i} + \sum_{i=1}^{q} \epsilon_{2i} RGDP_{t-i} + \sum_{i=1}^{q} \epsilon_{3i} GSCOM_{t-i} + \sum_{i=1}^{q} \epsilon_{4i} GECOSER_{t-i} + \sum_{i=1}^{q} \epsilon_{5i} POP_{t-i}$$

$$+ \sum_{i=1}^{q} \epsilon_{6i} MANUVA_{t-i} + \sum_{i=1}^{q} \epsilon_{7i} FDI_{t-i} + \varepsilon_{5t}$$

(3.10)

$$\boldsymbol{MANUVA_t} = \delta_O + \sum_{i=1}^{q} \delta_{1i}\ MANUVA_{t-i} + \sum_{i=1}^{q} \delta_{2i} POP_{t-i} + \sum_{i=1}^{q} \delta_{3i} GSCOM_{t-i} + \sum_{i=1}^{q} \delta_{4i} GECOSER_{t-i} + \sum_{i=1}^{q} \delta_{5i} INTRATE_{t-i}$$

$$+ \sum_{i=1}^{q} \delta_{6i} RGDP_{t-i} + \sum_{i=1}^{q} \delta_{7i} FDI_{t-i} + \varepsilon_{6t}$$

(3.11)

$$\boldsymbol{POP_t} = \omega_O + \sum_{i=1}^{q} \omega_{1i}\ POP_{t-i} + \sum_{i=1}^{q} \omega_{2i} RGDP_{t-i} + \sum_{i=1}^{q} \omega_{3i} GSCOM_{t-i} + \sum_{i=1}^{q} \omega_{4i} GECOSER_{t-i} + \sum_{i=1}^{q} \omega_{5i} FDI_{t-i}$$

$$+ \sum_{i=1}^{q} \omega_{6i} MANUVA_{t-i} + \sum_{i=1}^{q} \omega_{7i} INTRATE_{t-i} + \varepsilon_{7t}$$

(3.12)

π, β, α, ϕ, ϭ, δ, ω are long run coefficients and q is the maximum lag length. The main aim of the study is to evaluate the effect of disaggregated government expenditure and manufacturing sector performance on economic performance in Nigeria.

The model is specified in the mathematical and econometric form as it is in (3.4) and (3.5).

In order to ascertain the nexus between disaggregated government expenditure and manufacturing sector performance and their influence on economic performance, the Autoregressive Distributed Lag Model (ARDL) is adopted so as to achieve this objective.

Therefore, the ARDL model is specified in the econometric form as

$$\boldsymbol{lnRGDP_t} = \alpha_O + \sum_{i=1}^{p} \alpha_1\ \Delta lnRGDP_{t-i} + \sum_{i=0}^{p} \alpha_2 \Delta lnMANUVA_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta lnGSCOM_{t-i} + \sum_{i=0}^{p} \alpha_4 \Delta lnGECOSER_{t-i} + \sum_{i=0}^{p} \alpha_5 \Delta lnFDI_{t-i}$$

$$+ \sum_{i=0}^{p} \alpha_6 \Delta lnPOP_{t-i} + \sum_{i=0}^{p} \alpha_7 \Delta lnINTRATE_{t-i} + \delta_1 lnRGDP_{t-i} + \delta_2 lnMANUVA_{t-i} + \delta_3 lnGSCOM_{t-i} + \delta_4 lnGECOSER_{t-i} + \delta_5 lnFDI_{t-i}$$

$$+\delta_6 lnPOP_{t-i} + \delta_7 lnINTRATE_{t-i} + \varepsilon_t$$

(3.13)

Equation (3.13) becomes the model used to test for no level relationship in a time series ARDL framework. The parameters $\alpha_{1.....}\alpha_7$ are short run multipliers or elasticities and $\delta_{1.....}\delta_7$ are long run multipliers (elasticities) used to calculate the error correction or speed of adjustment. Once a long run relationship is ascertained, the error correction model (ECM) in a time series ARDL framework is estimated as

$$\boldsymbol{lnRGDP_t} = \alpha_O + \sum_{i=1}^{p} \alpha_1 \, \Delta lnRGDP_{t-i} + \sum_{i=0}^{p} \alpha_2 \Delta lnMANUVA_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta lnGSCOM_{t-i} + \sum_{i=0}^{p} \alpha_4 \Delta lnGECOSER_{t-i} + \sum_{i=0}^{p} \alpha_5 \Delta lnFDI_{t-i}$$

$$+ \sum_{i=0}^{p} \alpha_6 \Delta lnPOP_{t-i} + \sum_{i=0}^{p} \alpha_7 \Delta lnINTRATE_{t-i} + \rho_1 ECM_{t-i} + \varepsilon_t$$

The data used for variables employed in this study are sourced from World Development Indicator, Central Bank of Nigeria Statistical Bulletin and Nigeria Bureau of Statistics.

Analysis of Model Result

4.1.1 Unit Root Test

Stationarity of series becomes important when using time series data for analysis. Linear regressions generally assume that the series to be used for modelling are stable over time. It is obligatory that series must exhibit stationarity in order not to yield spurious and misleading results. The null hypothesis of Augmented Dickey-Fuller test and Philips-Perron test used in this study states that the series contain unit root but with variants in their alternative hypothesis. The results are presented in Tables 4.1 and 4.2.

Table 4.1-Augumented Dickey-Fuller(ADF) Test Result

Variables	Level			First Difference			I(d)
	CONSTANT	CONSTANT AND TREND	NO CONSTANT NO TREND	CONSTANT	CONSTANT AND TREND	NO CONSTANT NO TREND	
RGDP	-0.4140	-1.8324	2.8559	-3.3825**	-3.0810	-1.1454	I(1)
GECOSER	-0.6700	-1.8684	1.0013	-6.5013***	-6.4084***	-6.0883***	I(1)
GSCOM	-2.1486	-0.1337	-0.6153	-8.0677***	-5.2179***	-1.4033***	I(1)
MANUVA	-1.2964	-2.2591	0.3387	-4.5505***	-4.8155***	-4.6002***	I(1)
INTrate	-2.8461*	-2.7168	-0.3163	-2.6349*	-2.8417	-2.6679***	I(1)
FDI	-1.8330	-3.6828**	3.9298***	-	-	-	I(0)
POP	2.006	-5.4589***	2.9639***	-	-	-	I(0)

, **, * represent significance levels at 10%, 5%, and 1% respectively.*

Source: Author's Compilation

Table 4.2- Phillips-Perron (PP) Test Results

Variables	Level			First Difference			I(d)
	CONSTANT	CONSTANT AND TREND	NO CONSTANT NO TREND	CONSTANT	CONSTANT AND TREND	NO CONSTANT NO TREND	
RGDP	0.7224	-3.1497	3.1139	-3.8568***	-3.7641**	-2.5415**	I(1)
GECOSER	-0.6509	-2.0434	0.9492	-6.5021***	-6.4105***	-6.1074***	I(1)
GSCOM	-1.4723	-2.7752	1.4877	-12.4317***	-14.8407***	-6.8283***	I(1)
MANUVA	-1.4706	-2.3652	0.1111	-4.5505***	-4.7903***	-4.5567***	I(1)
INTrate	-2.4703	-2.1898	0.1980	-6.8525***	-7.0490***	-6.9237***	I(1)
FDI	-1.5733	-3.7654**	-1.9118*	-	-	-	I(0)
POP	1.5490	-5.4663***	-3.5310***	-	-	-	I(0)

, **, * represent significance levels at 10%, 5%, and 1% respectively*

Source: Author's Compilation

Tables 4.2 and 4.3 present the ADF and PP unit root tests results. The ADF results shows that Real Gross Domestic Product per Capita(RGDP), Government Expenditure on Economic Services (GECOSER), Government Expenditure on Community and Social Services (GSCOM), Manufacturing Value-added(MANU) and Interest Rate(INTR) are not stationary at level considering all test options (constant, constant and trend and without constant and trend). Meanwhile, Foreign Direct Investment (FDI) and Population (POP) is stationary at its level form. The last column titled "I(d)" in Tables 4.1 and 4.2 concludes on the order of integration of the variables. It is important to note that the ADF test result in Table 4.1 conforms to the PP unit root test result in Table 4.2.

The results of the unit root test shows that the variables are of different integration order (i.e., both I(0) and I(1)), running a regression analysis on these variables in their levels with the use of the Unrestricted Vector Auto regression (VAR) to determine causality between the variables can yield unreliable outcomes. Hence, Toda-Yamamoto (TY) model is the best for testing for causality in variables with different integration order (Toda and Yamamoto, 1994).

4.1.2 Cointegration Test

Cointegration test is used to ascertain the existence of long-run equilibrium between series. Since it has been established by the unit root tests that the series are fractionally integrated of different orders, there is need to check whether there is existence of similar trend properties between the series as a model on co-integrated series is said to be super consistent. Thus, given the model and order of integration of the variables, the most appropriate cointegration test is the Autoregressive Distributed Lags (ARDL) bounds test. The ARDL bounds test allows for the combination of variables with different orders of integration. The ARDL bounds test result is presented in Table 4.3:

Table 4.3: ARDL Bounds Test Result

Test Statistics				
F-Statistic	4.65			
Critical Value Bounds				
Significance	**10%**	**5%**	**2.5%**	**1%**
1(0)	2.26	2.62	2.96	3.41
1(1)	3.35	3.79	4.18	4.68

Source: Author's Compilation

Table 4.4 shows that the value of the F-statistic is greater than the upper critical bound, i.e. I(1) bound at 5% significance level. It can thus be concluded that long run relationship exists among the variables. Hence, both the short run (dynamic) model and long run (static) model will be estimated.

Table 4.4: Toda-Yamamoto Estimates

	LNRGDP	LNPOP	LNMANUVA	LNGSCOM	LNFDI	LNGECOSER	INTRATE
LNRGDP(-1)	0.663835	0.001936	-2.191468	-0.951934	2.105066	-0.868070	-53.74882
	(0.24278)	(0.00082)	(0.53733)	(3.59770)	(3.23058)	(4.43397)	(21.3309)
	[2.73427]	[2.36741]	[-4.07844]	[-0.26459]	[0.65161]	[-0.19578]	[-2.51976]
LNRGDP(-2)	0.122523	-0.000666	1.976705	-1.188237	1.251884	-4.329785	15.81486
	(0.24003)	(0.00081)	(0.53123)	(3.55686)	(3.19391)	(4.38364)	(21.0887)
	[0.51046]	[-0.82332]	[3.72099]	[-0.33407]	[0.39196]	[-0.98772]	[0.74992]
LNPOP(-1)	52.20759	1.739839	144.1534	378.6757	362.9950	-490.7276	4394.029
	(25.1988)	(0.08487)	(55.7700)	(373.409)	(335.306)	(460.206)	(2213.96)
	[2.07183]	[20.5009]	[2.58478]	[1.01410]	[1.08258]	[-1.06632]	[1.98470]
LNPOP(-2)	-51.94865	-0.739593	-144.0026	-365.2670	-362.2369	505.0489	-4333.750
	(25.1078)	(0.08456)	(55.5687)	(372.061)	(334.095)	(458.545)	(2205.96)
	[-2.06903]	[-8.74636]	[-2.59144]	[-0.98174]	[-1.08423]	[1.10142]	[-1.96456]
LNMANUVA(-1)	-0.085057	-0.000935	1.038492	-0.143769	-1.314542	-0.248014	10.88826
	(0.07698)	(0.00026)	(0.17038)	(1.14077)	(1.02436)	(1.40594)	(6.76366)
	[-1.10488]	[-3.60667]	[6.09522]	[-0.12603]	[-1.28328]	[-0.17640]	[1.60982]
LNMANUVA(-2)	-0.046957	-0.000381	-0.587569	-0.194354	-1.155212	0.929662	-4.724641
	(0.08427)	(0.00028)	(0.18650)	(1.24872)	(1.12130)	(1.53898)	(7.40372)
	[-0.55724]	[-1.34231]	[-3.15049]	[-0.15564]	[-1.03024]	[0.60408]	[-0.63814]
LNGSCOM(-1)	0.012301	4.70E-05	0.009242	-0.227217	0.078552	-0.288396	-1.771140
	(0.01596)	(5.4E-05)	(0.03533)	(0.23657)	(0.21243)	(0.29156)	(1.40262)
	[0.77056]	[0.87376]	[0.26156]	[-0.96047]	[0.36978]	[-0.98916]	[-1.26274]
LNGSCOM(-2)	0.032675	-7.68E-05	0.152700	-0.313216	-0.553445	-0.237724	1.218017
	(0.01520)	(5.1E-05)	(0.03365)	(0.22530)	(0.20231)	(0.27767)	(1.33581)
	[2.14911]	[-1.49983]	[4.53799]	[-1.39022]	[-2.73563]	[-0.85614]	[0.91182]
LNFDI(-1)	-0.004551	-2.15E-05	-0.117974	0.403187	-0.042501	0.548437	1.688961
	(0.01669)	(5.6E-05)	(0.03694)	(0.24735)	(0.22211)	(0.30484)	(1.46653)
	[-0.27268]	[-0.38176]	[-3.19348]	[1.63005]	[-0.19135]	[1.79909]	[1.15167]
LNFDI(-2)	-0.024135	-0.000104	0.010338	-0.066914	0.213694	0.615979	-0.044776
	(0.01531)	(5.2E-05)	(0.03388)	(0.22681)	(0.20367)	(0.27953)	(1.34477)
	[-1.57685]	[-2.01218]	[0.30519]	[-0.29502]	[1.04923]	[2.20360]	[-0.03330]
LNGECOSER(-1)	-0.013856	-7.40E-05	-0.004597	-0.011831	-0.037988	0.376063	-1.904179
	(0.01371)	(4.6E-05)	(0.03035)	(0.20319)	(0.18245)	(0.25042)	(1.20470)
	[-1.01056]	[-1.60206]	[-0.15147]	[-0.05823]	[-0.20821]	[1.50175]	[-1.58062]
LNGECOSER(-2)	-0.010143	-3.93E-05	-0.096469	0.497226	0.154403	0.141770	1.609689
	(0.01330)	(4.5E-05)	(0.02944)	(0.19710)	(0.17699)	(0.24292)	(1.16861)
	[-0.76258]	[-0.87685]	[-3.27706]	[2.52271]	[0.87240]	[0.58362]	[1.37744]
INTRATE(-1)	0.001972	-1.90E-05	0.008900	0.088881	0.034974	-0.009437	0.777674
	(0.00240)	(8.1E-06)	(0.00531)	(0.03552)	(0.03190)	(0.04378)	(0.21062)
	[0.82243]	[-2.35669]	[1.67759]	[2.50208]	[1.09642]	[-0.21556]	[3.69236]
INTRATE(-2)	-0.001880	-1.35E-06	-0.007845	-0.014273	0.059139	-0.021962	0.057282
	(0.00248)	(8.4E-06)	(0.00549)	(0.03675)	(0.03300)	(0.04530)	(0.21791)
	[-0.75796]	[-0.16154]	[-1.42923]	[-0.38835]	[1.79194]	[-0.48486]	[0.26287]
C	4.893698	0.004324	18.25774	-187.6528	-39.07859	-132.3184	-261.6948
	(3.11283)	(0.01048)	(6.88934)	(46.1277)	(41.4207)	(56.8498)	(273.493)
	[1.57210]	[0.41243]	[2.65015]	[-4.06812]	[-0.94346]	[-2.32751]	[-0.95686]

Values in ( ) are standard errors while values in [] are t- statistics.

Source: Author's compilation

Table 4.4 shows the estimates of the Toda-Yamamoto variant of VAR model. It is practically not ideal in economic sense to interpret the estimates of the model in multivariate models but

inferences can be made from the model estimate or result of the VAR model. The model is therefore estimated in order to test for causality among the variables as used in this study; it causality test which is the third objective of the study is to show the direction of causality among the variables.

4.1.3 Toda-Yamamoto Causality Test

In order to ascertain the direction of causality among the variables, it is necessary to estimate the Toda-Yamamoto-based Granger Causality tests with the help of the Modified WALD (MWALD) test. The Modified WALD (MWALD) test which excludes the problems the ordinary Granger causality test is associated with by non-consideration of any feasible non-stationary or cointegrated series when carrying out a causality test (Toda and Yamamoto, 1995). Table 4.7 presents the results of the TY variant of causality test.

Table 4.5: Toda-Yamamoto Causality Test

Null Hypothesis	Chi-Sq	P-value	Decision (H_0)
Dependent variable: LNRGDP			
LNPOP does not Granger cause LNRGDP	4.368056	0.1126	Accept
LNMANUVA does not Granger cause LNRGDP	4.854863	0.0883*	Reject
LNGSCOM does not Granger cause LNRGDP	4.857686	0.0881*	Reject
LNFDI does not Granger cause LNRGDP	2.501371	0.2863	Accept
LNGECOSER does not Granger cause LNRGDP	2.955748	0.2281	Accept
INTRATE does not Granger cause LNRGDP	0.979987	0.6126	Accept
Dependent variable: LNPOP			
LNRGDP does not Granger cause LNPOP	8.962540	0.0113**	Reject
LNMANUVA does not Granger cause LNPOP	43.76265	0.0000***	Reject
LNGSCOM does not Granger cause LNPOP	3.422349	0.1807	Accept
LNFDI does not Granger cause LNPOP	4.063486	0.1311	Accept
LNGECOSER does not Granger cause LNPOP	5.915585	0.0519*	Reject
INTRATE does not Granger cause LNPOP	6.277132	0.0433**	Reject
Dependent variable: LNMANUVA			
LNRGDP does not Granger cause LNMANUVA	17.17095	0.0002***	Reject
LNPOP does not Granger cause LNMANUVA	7.155498	0.0279**	Reject
LNGSCOM does not Granger cause LNMANUVA	20.71269	0.0000***	Reject
LNFDI does not Granger cause LNMANUVA	11.48072	0.0032***	Reject
LNGECOSER does not Granger cause LNMANUVA	14.30822	0.0008***	Reject
INTRATE does not Granger cause LNMANUVA	3.818897	0.1482	Accept
Dependent variable: LNGSCOM			
LNRGDP does not Granger cause LNGSCOM	0.924889	0.6297	Accept
LNPOP does not Granger cause LNGSCOM	11.81188	0.0027*	Reject
LNMANUVA does not Granger cause LNGSCOM	0.137161	0.9337	Accept
LNFDI does not Granger cause LNGSCOM	3.177996	0.2041	Accept
LNGECOSER does not Granger cause LNGSCOM	7.943909	0.0188**	Accept
INTRATE does not Granger cause LNGSCOM	6.362793	0.0415**	Reject
Dependent variable: LNFDI			
LNRGDP does not Granger cause LNFDI	2.824972	0.2435	Accept
LNPOP does not Granger cause LNFDI	1.202046	0.5483	Accept
LNMANUVA does not Granger cause LNFDI	9.254712	0.0098***	Reject
LNGSCOM does not Granger cause LNFDI	8.031910	0.0180**	Reject
LNGECOSER does not Granger cause LNFDI	0.810497	0.6668	Accept
INTRATE does not Granger cause LNFDI	5.967194	0.0506*	Accept
Dependent variable: LNGECOSER			
LNRGDP does not Granger cause LNGECOSER	3.782971	0.1508	Accept
LNPOP does not Granger cause LNGECOSER	13.89400	0.0010***	Reject
LNMANUVA does not Granger cause LNGECOSER	0.493702	0.7813	Accept
LNGSCOM does not Granger cause LNGECOSER	1.512806	0.4694	Accept
LNFDI does not Granger cause LNGECOSER	6.527847	0.0382**	Reject
INTRATE does not Granger cause LNGECOSER	0.368148	0.8319	Accept
Dependent variable: INTRATE			
LNRGDP does not Granger cause INTRATE	11.03159	0.0040***	Reject
LNPOP does not Granger cause INTRATE	8.085080	0.0176**	Reject
LNMANUVA does not Granger cause INTRATE	3.106581	0.2116	Accept
LNGSCOM does not Granger cause INTRATE	2.781630	0.2489	Accept
LNFDI does not Granger cause INTRATE	1.434694	0.4880	Accept
LNGECOSER does not Granger cause INTRATE	3.026239	0.2202	Accept

, **, * represent significance levels at 10%, 5%, and 1% respectively*

Table 4.7 gives highlights of the causality test of Real Gross Domestic Product Per Capita (RGDP), Government expenditure on Economic Services (GECOSER), Government Expenditure on Community and Social Services (GSCOM), Manufacturing Value-Added (MANUVA), Interest Rate (INTRATE), Population (POP) and Foreign Direct Investment (FDI). It can be inferred that there is causality between LNMANUVA and LNRGDP as the p-value is statistically significant at 10% level, this implies that manufacturing sector performance cause economic growth in Nigeria while LNRGDP also cause LNMANUVA as these variable cause each other implies that there is bidirectional causality from LNMANUVA to LNRGDP and also there is a causality from LNGSCOM to LNRGDP as the null hypothesis is being rejected at 10% level of significance, from this result it can therefore implies that the money government spend on community and social services cause economic growth. Also, there is a unidirectional causality from LNRGDP to LNPOP, this therefore implies that as the level of economic growth increases in Nigeria it therefore have a unidirectional causality with population which then means that the economic performance have causal link with population since there is a causality from LNRGDP to LNPOP.

It can also be deduced that there is a unidirectional causality from LNMANUVA to LNPOP since the p-value is rejected at 5% level and this means that as the Nigeria experience changes in the manufacturing sector performance, it significantly cause changes in population. The result also shows that there is bidirectional causality from LNGECOSER to LNPOP, which means the money government spends on economic services cause population while population will significantly cause government expenditure on economic services as well. Also, there occurs bidirectional causality from INTRATE to LNPOP as the probability value is seen to be less than 5% level, this therefore means interest rate Granger cause population while population also Granger cause the interest changed on deposit money bank loans. From Table 4.7, it can also be deduced that there is bidirectional causality from FDI to LNMANUVA; this therefore means that both FDI cause LNMANUVA cause each other which shows that foreign direct investment cause the performance of the manufacturing sector in terms of the manufacturing sector value added while the performance of the manufacturing sector attracts or cause foreign direct investment in Nigeria.

It can as well be inferred that LNGSCOM Granger cause LNMANUVA which simply means the expenditure of government on social and community services cause manufacturing sector performance while there is also a unidirectional causality from LNGECOSER to LNMANUVA.
It can also be deduced from the causality test that there is a unidirectional causality from INTRATE to LNGSCOM which means that INTRATE and LNGSCOM cause LNGSCOM. It can also be inferred that there is a unidirectional causality from INTRATE to FDI since the p-value shows that the null hypothesis is rejected at 1%. This implies that interest rate significantly has a causal relationship with foreign direct investment. Also there is a unidirectional causality from LNRGDP to INTRATE.
Conclusively, it is evident or can be seen that from the result or report of the causality test that there is a unidirectional causality from LNGSCOM to LNRGDP and from LNRGDP to LNPOP. There is also a unidirectional causality from LNMANUVA to LNPOP and also from LNGECOSER to LNPOP. It can also be concluded that there is a unidirectional causality from LNGSCOM to LNMANUVA and also a unidirectional causality from INTRATE to LNGSCOM and INTRATE to FDI and also from LNRGDP to INTRATE, while bidirectional causality exists between LNMANUVA and LNRGDP also there is bidirectional causality between LNGECOSER and LNPOP and between INTRATE and LNPOP. Also, bidirectional causality occur between FDI and LNMANUVA

4.1.4 LM Diagnostic Test

The validity of any model relies on the fulfillment of certain assumptions. Therefore,it is important to check the validity and reliability of the Toda-Yamamoto estimates. The commonest and most relevant post estimation test for multivariate models is the serial correlation LM test and VAR stability test. Serial correlation is a violation of the independent distribution of the error term over time in time series data. The presence of serial correlation can meaningfully alter or pollute the result and reliability of the model in determining causality and forecasting.

Table 4.6: Residual Serial LM Diagnostics Test

Lags	LM-Stat	Prob
1	10.90251	0.1022
2	71.72401	0.1088
3	63.12202	0.8046
4	48.20663	0.5052

Source: Author's Compilation

The null hypothesis for the LM test is that there is no serial correlation. The result presented in Table 4.8 suggests the non-rejection of the null hypothesis at 5% level of significance and affirms the presence of no serial correlation at the optimal lag length of one (1) used in the TY model estimation.

4.1.5 VAR Stability Test

The VAR stability test is a test to check whether the TY model is a stable and good model. Figure 4.6 shows the stability test of the TY model estimated.

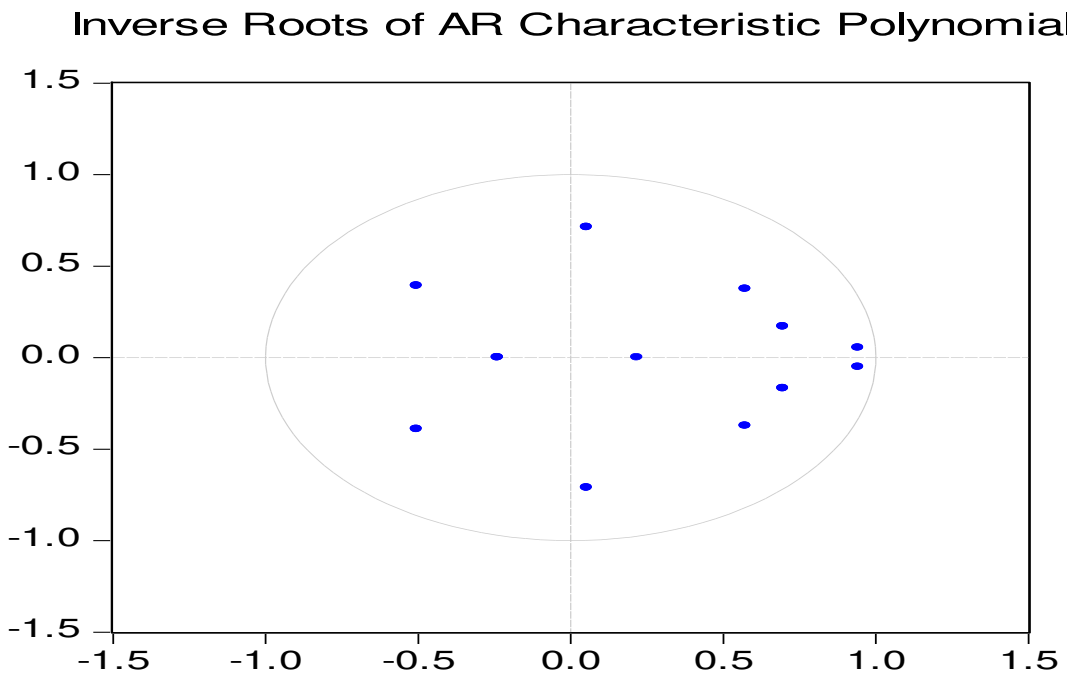


Figure 4.1: Inverse Roots of AR Characteristic Polynomial

No roots lie outside the unit circle and the VAR therefore satisfies the stability condition which therefore implies that VAR model is reliable.

4.2 ARDL Estimation

The study further estimates the effect of government expenditure and manufacturing sector performance on economic performance in Nigeria. Economic performance is also refers to as economic growth as used in this study. The study adopts the unrestricted error correction ARDL model. The ARDL model is a dynamic specification which uses the lag of the dependent variable and the lagged and contemporaneous values of the independent variables, through which the short run effects can be directly estimated, and the long run equilibrium relationship can be indirectly estimated which is the static model. One of the benefits of the ARDL technique is the ability to employ variables regardless of their order of integration i.e. I (0) or I (1) and it can be recall in this study from the unit root result in Table 4.3 and Table 4.3 that the unit root test shows that the variables are integrated of different order with the dependent variable being I(1) which supports the use or met the criteria to using the Autoregressive Distributed Lag Model (ARDL) and the Bounds test that determines whether a long run relationship exists among the variables or not. The ARDL model is therefore estimated based on the Schwarz lag length criteria in which the maximum lag length is one (1) lag.

Table 4.7: ARDL Estimation Results

Variable	Coefficient	t-Statistic		Prob.
Dependent Variable: LNRGDP				
Short-run (Dynamic) Model				
D(LNRGDP(-1))	0.500037***	4.1277		0.0005
D(LNMANUVA)	0.103373*	1.8639		0.0764
D(LNGSCOM)	0.003245	0.2774		0.7842
D(LNGSCOM(-1))	-0.034147***	-3.2859		0.0035
D(LNGECOSER)	-0.029328**	-2.4162		0.0249
D(INTRATE)	0.000493	0.2345		0.8169
D(INTRATE(-1))	0.000729	0.3531		0.7276
D(LNFDI)	0.030131*	1.9805		0.0609
D(LNFDI(-1))	0.026362**	2.2094		0.0486
D(LNPOP)	76.5670*	1.9893		0.0598
CointEq(-1)	-0.499963	-4.1271		0.0005
Long-run (Static) Model				
LNMANUVA	0.206762**	3.6798		0.0178
LNGSCOM	0.085532**	2.1674		0.0419
LNGECOSER	-0.058660***	-2.9709		0.0073
INTRATE	-0.005658	-1.3128		0.2034
FDI	0.112994***	3.0454		0.0061
POP	0.941481**	2.1703		0.0416
Constant	4.377068**	3.8228		0.0199
R-Squared	**Adjusted R^2**	**F-stat**	**DW**	**Prob (F-stat)**
0.9998	0.9887	1214.907	1.9943	0.0000

, **, * represent significance levels at 10%, 5%, and 1% respectively.*

Source: Author's Compilation

4.2.1 Analysis of Results

Table 4.7 presents the short-run and long-run results of the effect of Government expenditure on Economic Services (GECOSER), Government Expenditure on Community and Social Services (GSCOM), Manufacturing Value-Added(MANUVA), Interest Rate (INTRATE), Foreign Direct Investment(FDI) on Economic Growth (RGDP) in Nigeria. The results were estimated based on the specifications selected using the Schwarz Criteria (SC).

The short run result as presented in table 4.7 shows that the first lag or economic growth is statistically significant at 1% level which shows that past economic growth have a positive and significant effect on future economic growth. The short run result also shows that manufacturing sector performance have a positive and significant impact on economic growth since the coefficient is statistically significant at 10% level. This implies that a percentage change in manufacturing sector performance will lead to 0.103% change in economic growth, which therefore simply shows that if the level of manufacturing sector performance increases by 1% economic growth will significantly increases by 0.103%, vice versa and it shows that manufacturing sector performance serves as a catalyst for growth in Nigeria. Also government expenditure on social and economic services has a positive but not significant effect on economic growth since the coefficient is not statistically significant and therefore means that the expenditure government makes on social and community services has no role to play on economic growth in the short run, this is significantly different from the first lag of government expenditure on social and community services has a negative and significant impact on future economic growth.

From the short run result in Table 4.7, it can also be inferred that government expenditure on economic services have a negative and significant impact on economic growth as the coefficient is statistically significant at 5% level. This means that less expenditure made on economic services by the government will create room for economic growth increase, vice versa. Also from the short run result, interest rate and the first lag of interest rate have a positive but not statistically significant impact on economic growth as the coefficient are not statistically significant, this therefore implies that the interest rate have no role to play on economic growth in Nigeria in the short run.

The short run result also presents that foreign direct investment have a positive and significant impact on economic growth in Nigeria which implies that a 1% increase (decrease) will lead to 0.030131% increase (decrease) in economic growth since the coefficient of foreign direct investment in statistically significant at 10% level and therefore means foreign direct investment helps to drive economic growth in the short run. The result in the short run also shows that a 1% change in the first lag of foreign direct investment will significantly leads to 0.026362% change in future economic growth. Lastly in the short run, the coefficient of population is also

significant at 10% level and therefore implies that population plays a positive and significant role on economic growth in the short run as well which means as the population increases, economic growth also increases.

The long run result as presented in table 4.7 shows that manufacturing sector performance have a positive and significant impact on economic growth in Nigeria since the coefficient is statistically significant at 5% level and therefore means that a 1% increase in manufacturing sector performance will significantly leads to 0.206762% increase in economic growth, vice versa. This being compared to the short run result shows that manufacturing sector performance plays more significant role on economic growth in the long run than in the short run and can be inferred that as the performance of the manufacturing sector increases, economic growth therefore increases as well, and so manufacturing sector performance is said to be a catalyst for growth in long run as well.

The long run result for government expenditure on social and community services is different from the short run result as it shows that the coefficient is statistically significant in the long run at 5% level and therefore means that the expenditure of the government on social and community service have a positive and significant impact on economic growth, and therefore implies that if government increase its expenditure on social and economic services by a percentage, it will significantly drive economic growth up by 0.085532% while government expenditure on economic services have a negative and significant impact on economic growth as it is in the short run also.

The long result also shows that foreign direct investment is good for economic growth as the coefficient of foreign direct investment is statistically significant at 1% level and therefore shows that foreign direct investment have a positive and significant increase one economic growth in the long run, the result shows that a 1% increase in foreign direct investment will significantly result into 0.112994% increase in economic growth and therefore means that foreign direct investment helps to stimulate economic growth in Nigeria and so the more foreign investors investments in Nigeria, the higher the economic grows. In the short run as well, population is seen to have a positive and significant impact on economic growth in the long run as the coefficient is statistically significant at 5% level and this therefore means that an increase in the

Nigerian population by 1% will leads to 0.941481% increase in economic growth and therefore means population helps to boost economic growth in Nigeria.

The coefficient of the error correction term is negative which means there is convergence in the long run, the coefficient is also less than 1 and statistically significant at 1% level. This confirms that long-run relationship exists among the variables. The estimated value of the coefficient indicates that the speed of adjustment from the short run dynamics to long-run equilibrium is 49.9%. In other words, 49.9% of short run equilibrium will be adjusted for annually and also the variables will adjust quickly to the long run equilibrium at a speed of 49.9% annually, following a one-time shock in the short run.

The result as estimated in this study does not conform to Ogbodo (2018) and Sikiru and Umaru (2019) which reported that manufacturing sector performance does not have a significant impact on economic growth. The result also does not conform to Afolabi and Laseinde (2019) which reported that manufacturing sector performance and population does not have a significant impact on economic growth.

The result as estimated in this study conforms to Eze (2019) which reported that foreign direct investment and manufacturing sector performance have a positive and significant impact on economic growth in the short run and long run.

The R-Squared value of 0.99 indicates that 99.0% of the variations in economic growth is explained by government expenditure on economic services, government expenditure on community and social services, manufacturing value-added, interest rate and foreign direct investment. The Durbin Watson Stat of 1.99 which is within the acceptable range of 1.5 to 2.4 shows that the residuals in the model are serially uncorrelated. The F-Statistic which is less than 0.01 confirms that the estimated models in Table 4.7 is significant and valid.

4.3 Post Estimation Results

The validity, efficiency and reliability of any model that is estimated depends or relies on the fulfillment of certain assumptions. Failure of the estimated model to observe these guiding assumptions makes the estimates obtained unreliable, inconsistent, inefficient and poor for sound analysis, forecast and predictions. The reliability of the short run and long run regression results

is tested using relevant diagnostic tests to determine the robustness of the model. Table 4.10 shows the results of various diagnostic tests performed on the estimated model

Table 4.8: Diagnostic Test Results

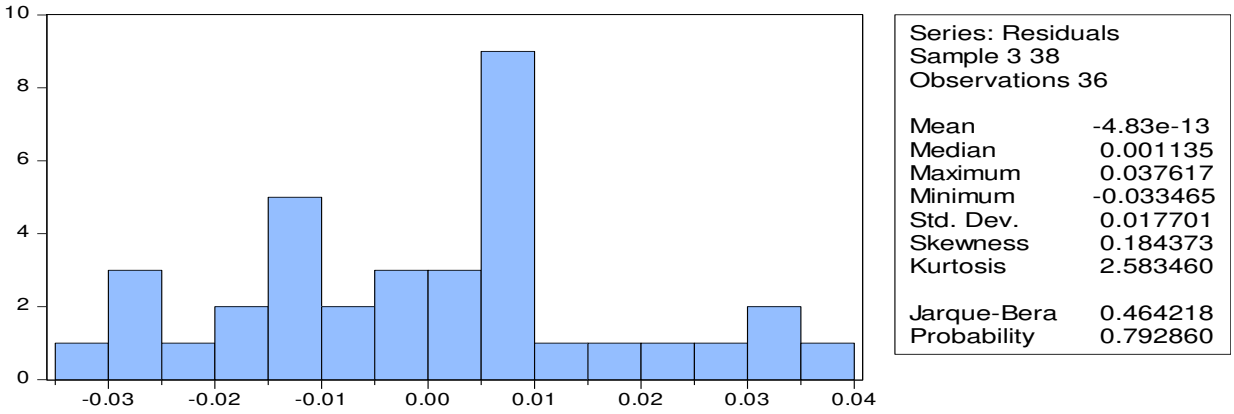
Test	F- Stat.	Prob.
Jarque- Bera	0.464218	0.7927
Breuch-Godfrey	0.318338	0.7312
ARCH	0.316889	0.5773
Ramsey RESET	1.024636	0.3235

Source: Author's Compilation

In Table 4.8, the Jarque-Bera test suggests that the residuals are normally distributed since the probability value is greater than the 5% significance level. Hence, the hypothesis of normal distribution for the residuals cannot be rejected. The Breuch-Godfrey serial correlation (LM) test result suggests that the hypothesis of no autocorrelation cannot be rejected since the probability value is greater than the 5% critical level. The ARCH and Ramsey-Reset test result whose probability value are greater than 5% indicate that there is neither heteroscedasticity nor functional misspecification in the estimated model. Thus, the hypothesis of constant variance and linear relationship cannot be rejected.

Since the OLS assumptions has not been violated and all met, it therefore follow that the models estimated in Table 4.7 are consistent, efficient, reliable, valid and feasible for forecast and policy making since the diagnostic test suggests error normality, absence of autocorrelation and functional misspecification and exhibits a constant or equal mean and variance.

Normality Test Result



5.0 Conclusion and Recommendation

5.1.1 Conclusion

On the basis of the findings in this study, the conclusion can be drawn from the long run result that as manufacturing sector performance increase this leads to an increase in economic growth which implies that an increased volume of output of the manufacturing sector will stimulate or boost economic growth in Nigeria, also, an increase in government expenditure on social and community services and foreign direct investment will lead to a significant increase in economic growth in Nigeria. From the findings it can also be concluded that an increase in population will significantly increase economic growth, vice versa and it can be deduced that all the variables as adopted in the study are statistically significant except inflation in the long run as the conclusion of the study is based on the output generated from the long run result

5.1.2 Recommendation

From the above conclusion, this study provides that a large percentage of the government expenditure should be channeled to capital expenditure since the government expenditure on social and community services have a significant impact on economic growth because giving a high percentage to government expenditure on community and social services in the total government expenditure in the annual budget coupled with improved and proper implementation of the policies that surrounds the expenditure will significantly help to improve economic growth.

Also, for manufacturing sector output to act as a catalyst for growth in Nigeria there are some important activities to be effected which includes improving legal, fiscal and administrative environment if the manufacturing sector in general. Also, government expenditure on the manufacturing sector should be increased and appropriate use of the fund should be put in place. The government should also increase its expenditure on roads, infrastructure and construction and stable energy supply so as to help drive in more foreign direct investment as it helps to also stimulate economic growth. Government should also invest more in the population through human capital development such as training, education and health because population in Nigeria also plays a significant role on economic growth.

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