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Impact of Fiscal Policy Indicators on the Manufacturing Sector in Nigeria

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Abstract

The government encourages the manufacturing industrial sector by coordinating fiscal measures and all the fiscal policies are blueprints and methods used to generate income, make expenditures, and repay debts in the process of governing the economy and improving industrial output. Therefore, the study examined the impact of fiscal policy on manufacturing industrial sector in Nigeria from 1987 to 2022. The study adopted the ex post facto research design and secondary data which are time series data and were sourced from the Central Bank of Nigeria Statistical Bulletin December 2022. The study further adopted the Auto-regressive Distributed Lag (ARDL) approach to estimate the effect of fiscal policy indicators on manufacturing industrial output in Nigeria and the paper revealed that based on the coefficient of the government capital expenditures in Nigeria, oil taxation in Nigeria and public external debt in Nigeria have a negative effect on manufacturing industrial output in Nigeria while, government recurrent expenditures in Nigeria, non-oil taxation in Nigeria and public domestic debt in Nigeria were found to have a positive effect on manufacturing industrial output in Nigeria. However, the probability values of the model revealed that government recurrent expenditures in Nigeria, oil taxation in Nigeria, and public domestic debt in Nigeria have a significant effect on manufacturing industrial output in Nigeria while, government capital expenditures in Nigeria, non-oil taxation in Nigeria, and public external debt in Nigeria have an insignificant effect on manufacturing industrial output in Nigeria. Therefore, the government through the Federal Ministry of Finance and other related Agencies should design a mechanism to track the fiscal policy indicators in Nigeria to ensure that projects are industrially driven, especially the infrastructural projects for a massive increase in industrial output in Nigeria but manufacturing industrial output in Nigeria.

Keywords: *Fiscal policy, Manufacturing, Expenditure, Taxation, Debt*

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Background to the Study

Manufacturing is vital for economic development as it generates employment, income, innovation, export opportunities, and infrastructure development, while also contributing to economic stability and diversification. Also, a diverse and robust manufacturing sector can contribute to economic stability by reducing reliance on volatile sectors such as agriculture or natural resource extraction. It provides a foundation for sustained growth and resilience to external shocks. In Nigeria, where manufacturing has historically faced challenges such as inadequate infrastructure, high energy costs, and limited access to finance, fiscal policies aimed at addressing these issues can have a particularly significant impact on the performance and growth of the manufacturing industrial sector and in achieving the significance of manufacturing industrial sector in the economy there is the need for effective macroeconomic policy implementation especially the fiscal policies which involves government spending, taxation, and debt management. Thus, increased government spending on infrastructure development, such as roads, ports, and power, can positively impact the manufacturing sector by reducing production costs, improving transportation, and enhancing overall competitiveness. And changes in taxation can directly affect manufacturing firms. For example, lower corporate taxes can provide relief to manufacturers, increasing their profitability and potentially encouraging investment and expansion. Conversely, higher taxes may reduce their profitability and investment incentives.

Also, government borrowing and debt levels can affect interest rates and overall economic stability, which in turn impact manufacturing investment decisions and consumer spending patterns. Fiscal policies also include regulatory measures such as licensing requirements, environmental standards, and labor laws. Excessive regulation can hamper the growth of the manufacturing sector by increasing compliance costs and stifling innovation. Nigeria's industrial output development has lagged behind expectations for an economy that aspires to be among the top twenty industrial participants soon. Nigeria is one of the world's Twenty least industrialized countries, with manufacturing value-added as a percentage of GDP typically below 5% over the last decade (smaller than the share at independence in 1960-8.6%). Nigeria's industrialization rose during the oil boom (1973-81), with manufacturing accounting for 11% of GDP, but it has since plummeted to less than 6% in 2022. Manufacturing export in the same year was barely 0.5 percent of exports, while imports of manufactured goods were about 15 percent of GDP or more than 60 percent of total imports. Thus, due to the importance of the manufacturing sector and the challenges facing the sector, various governments have implemented policies and reforms and these reforms individually and collectively aimed at liberalising the market and by implication making it easy for private ownership of means of production mainly private capital to be deepened in the Nigerian economy and the SAP policy of deregulation led to the depreciation of the exchange rate and high-interest rate which made locally produced goods very expensive and imported goods relatively cheap which further aggravated the performance of the sector. Also, the Nigeria's Industrial Policy as articulated by the National Economic Empowerment Development Strategy (NEEDS) document, Vision 20:2020 as well as the recently launched Nigerian Industrial Revolution Plan (NIRP) derive their raisin deter. These reforms are many and touch every aspect of the Nigerian economy. Some of them are Public Sector Reform,

Banking Sector Reform, Tax Reform, New Trade Policy Foreign Exchange Market Reform, New Agricultural Policy, New Auto Policy, Oil Sector Reform, Privatisation, and Commercialisation Policies among others (Nwaogwugwu *et al.,* 2016).

Despite many industrial policies and reforms, many emerging countries, including Nigeria, have failed to attain industrialization (Onye *et al.,* (2023). In Nigeria, the industry sector's contribution to national productivity has been steadily declining for a long time, and as a result, economic development has been disappointingly modest, while poverty levels have risen dramatically (Iwuagwu, 2009). The fiscal policy stance is a primary conduit via which the government's efforts toward industrialisation and better economic development are channeled. As a result, the purpose of this paper is to analyze the impact of fiscal policy on manufacturing industrial sector in Nigeria while the specific oobjectives are to:

i. Evaluate the effect of government capital expenditure on manufacturing industrial output in Nigeria.
ii. Assess the effect of government recurrent expenditure on manufacturing industrial sector in Nigeria.
iii. Investigate the effect of government non-oil taxation on manufacturing industrial sector in Nigeria.
iv. Determine the effect of government oil taxation on the manufacturing industrial sector in Nigeria.
v. Examine the effect of public external debt on the manufacturing industrial sector in Nigeria.
vi. Assess the effect of public domestic debt on the manufacturing industrial sector in Nigeria.

Materials and Methods

Conceptual Review

Fiscal policy deals with the government's deliberate actions in spending money and imposing taxes to influence macroeconomic variables in the desired direction. This includes sustainable economic growth, high employment creation, and low inflation (Muhamad and Henny, 2020). Thus, fiscal policy aims at stabilizing the economy. Increases in government spending or a reduction in taxes tend to pull the economy out of a recession; while reduced spending or increased taxes slow down a boom (Dornbusch & Fischer, 2003). Fiscal policy involves the application of government spending, taxation, and borrowing to influence the pattern of economic activities and also the level and growth of aggregate demand, output, and employment. The fiscal policy entails the government's management of the economy through the manipulation of its income and spending power to achieve certain desired macroeconomic objectives (goals) among which is economic growth (Medee & Nembee, 2011).

On the other hand, Kwode, (2015) viewed the industrial sector as the wealth-producing sector of an economy. It provides important material support for national infrastructure. The

industrial sector is involved in the production of two categories of goods; consumer goods and capital goods (Etim *et al.,* 2020). In industrialized countries, manufacturing accounts for a large portion of the industrial sector (Dickson, 2010). This indicates that this sector is critical for economic development since it generates jobs, which helps to improve agriculture and diversify the economy, hence increasing the country's foreign exchange profits (Charles, 2012). According to Muhamad and Henny (2020), industrial outputs are subdivided into two which are manufacturing industrial output and non-manufacturing industrial output. Uffie and Aghanenu (2019) opined that manufacturing output refers to the total volume of products or goods produced by a manufacturing process in a given period. It is a critical indicator of the economic health of a country or region, often tracked and analyzed by economists and policymakers. Manufacturing output can encompass a wide range of products, including automobiles, electronics, textiles, machinery, and more (Imide, 2019).

Empirical Review

Aiyedogbon *et al.,* (2023) investigate the effect of fiscal policy on manufacturing sector output in Nigeria between 1986 and 2021. The Fully modified ordinary Least Square method of analysis was adopted in carrying out the analysis. Unit root tests were carried out on each of the variables used in the study to avoid spurious regression results, and the results confirmed variables are all stationary at first difference. The Co-integration ARDL bound test showed that a long-run relationship exists between the variables, and the conditions necessary to apply the Fully Modified Ordinary Least Square method (FMOLS) were met. The study's insights demonstrated that fiscal policy strategies significantly bolster the output of the manufacturing sector output. The article advises that the budget and national planning should earmark increased resources for foundational advancements in their fiscal plans, such as electricity and transportation, as this will augment manufacturing industry results.

Onye *et al.,* (2023) examined the impact of Manufacturing Sector Output on economic growth in Nigeria from 1986 to 2020. Relying on the Autoregressive Distributive Lag Model (ARDL) and the Error Correction Model (ECM), the study indicates a significant short-run relationship between Manufacturing Sector Output and economic growth in Nigeria. The coefficient of the ECM was correctly signed (that is negative) and statistically significant at the conventional level of 5%. The long-run estimate indicates that short-run disequilibrium is adjusted into a long-run equilibrium relationship. The findings of the study reveal that Manufacturing Sector Performance has a positive and significant impact on the economic growth of Nigeria. However, gross fixed Capital Formation does not have a significant impact on the economic growth of Nigeria. From the findings of the study, it is recommended that the government should prioritize selective investment in manufacturing sector to drive growth and sustainable economic development in Nigeria.

Patel *et al.,* (2021) employed panel data analysis to examine the relationship between manufacturing output and economic growth in Canada, India, and the United States from 1999 to 2019 period. The study used an ex-post facto research design to ensure a well-rounded

result to achieve its specific objectives. Based on its analysis, the study's findings were as follows; manufacturing output has a positive and significant impact on economic growth in all three countries. In India, food processing, textiles, and chemicals had the strongest relationships, while in the United States, it was machinery, transportation equipment, and primary metals. In Canada, these sectors had the strongest relationships.

Muhamad and Henny (2020) analyzed the contribution of fiscal policy to the industrial sector. The appropriate model for time series data that is not stationary is the Vector Error Correction Model (VECM). The empirical results show that the industrial sector has a positive response to the shock of tax revenue variables and the consumer price index. On the other hand, the industrial sector responded negatively to shocks from government spending and the BI interest rate. The results of the variance decomposition analysis show that government spending provides the largest contribution to the industrial sector compared to other variables in this study.

Uffie and Aghanenu (2019) examine the effect of fiscal variables on manufacturing sector output in Nigeria between 1981 and 2016. The Autoregressive Distributed Lag (ARDL) bounds test approach to Cointegration was adopted. The findings showed that fiscal policy has both short-run and long-run impacts on the manufacturing sector output in Nigeria. Specifically, government expenditure has a positive significant impact on manufacturing output while company income tax dampened output owing to a multiplicity of taxes.

Ologbenla (2019) employed the VAR estimation technique to discern the relationship between fiscal strategies and external influences on Nigeria's manufacturing sector. His research insinuated that oil pricing and non-oil exports are pivotal external factors impacting fiscal strategies in Nigeria. Furthermore, while public debt did not seem to significantly affect government outlays, both external reserves and exchange rate fluctuations significantly influenced fiscal strategies. A notable limitation of his work was the absence of preliminary and post-assessment tests. Imide (2019) examined the impact of fiscal policy on the manufacturing sector of Nigeria from 1980 to 2017. The manufacturing sector was proxied as the index of the manufacturing sector while the explanatory variables were government expenditure, company income tax rate, and federal government domestic debt outstanding. The econometric techniques of Ordinary Least Squares (OLS) results reveal that government expenditure has a positive relationship with the index of the manufacturing sector while federal government domestic debt outstanding has a negative linear relationship with the index of the manufacturing sector.

Eze *et al.,* (2019) studied the influence of fiscal policy on real sector growth in Nigeria. The explanatory variables are government wealth expenditure controlled by interest rate, inflation rate, and exchange rate, while the real sector which captured as the output in the agricultural sector. Analyses obtained from the ARDL revealed a significant and positive influence of government wealth expenditure on the growth of the agricultural sector in Nigeria.

Olawunmi and Ayinka (2017) examined the contribution of government expenditures to the achievement of sustainable private-sector investment in Nigeria using a slow private-sector investment model estimated with the use of the ordinary least square method. It was found that fiscal policy has not been effective in the area of promoting sustainable private-sector investment in Nigeria. They, however, stated that factors such as wasteful spending, poor policy implementation, and lack of feedback mechanism for implemented policy evident in Nigeria which is indeed capable of hampering the effectiveness, of fiscal policy have made it impossible to come up with such a conclusion. Victor and Roman (2017) analyzed the fiscal policies on agriculture and industry in Ukraine, with the SVAR model using quarterly data for the 2001–2016 period. The results indicate that government spending has a positive effect on both agricultural production and industrial output, while an increase in government revenue is of the same expansionary impact for the latter only.

Bakare-Aremu and Osobase (2015) investigated the impact of monetary and fiscal policies (i.e. stabilization policies) on the performance of the manufacturing sector in Nigeria for the period 1970 to 2009 using an error correction mechanisms model. They discovered that those policies have an expected impact on the output of the manufacturing sector in Nigeria both in the short-run and long-run. The research work established that stabilization policy has a great impact on manufacturing sector performance and that if certain adjustments are made it would better the lots of the people by developing the sector, through Government fiscal policy and its monetary policy measures.

Osinowo (2015) examined the effect of fiscal policy on sectoral output growth in Nigeria from 1970 to 2013. Specifically, fiscal policy was represented with expenditure and controlled for trade openness, inflation rate, interest rate, population, labour, and political stability. Sectoral output measured included agriculture, mining, building and construction, manufacturing, wholesale and retail, and service sectors. The study employed the Autoregressive Distributed lag and Error Correction Model (ECM). The results revealed that total fiscal expenditure contributes to the output of all other sectors apart from the agricultural sector.

Eze (2014), examined the impact of fiscal policy on the manufacturing sector output in Nigeria. An ex-post facto design (quantitative research design) was used to carry out this study. The results of the study indicate that government expenditure significantly affects manufacturing sector output based on the magnitude and the level of significance of the coefficient and p-value and there is a long-run relationship between fiscal policy and manufacturing sector output. This finding implies that if the government did not increase public expenditure and its implementation, Nigerian manufacturing sector output would not generate a corresponding increase in the growth of the Nigerian economy and the paper recommended that expansionary fiscal policies should be encouraged as they play a vital role for the growth of the manufacturing sector output in Nigeria; that fiscal policy should be given more priority attention towards the manufacturing sector by increasing the level of budget implementation, which will enhance aggregate spending in the economy; and consistent

government implementation will contribute to the increase performance of manufacturing sector.

Theoretical Framework

The theoretical framework of this study is rooted in the Keynesian fiscal policy model. Following the 1929-30 Great Depression, the classical economists who opposed government interventions argued that strong trade unions prevented wage flexibility which resulted in high unemployment. The Keynesians, on the other hand, favoured government intervention to correct market failures. In 1936, John Maynard Keynes' (1883-1946) "General Theory of Employment, Interest, and Money", criticized the classical economists for putting too much emphasis on the long run. According to Keynes, "we are all dead in the long run". Keynes believed depression needed government intervention as a short-term cure. Increasing savings will not help but spend. The government will increase public spending giving individuals, purchasing power and producers will produce more, creating more employment. This is the multiplier effect that shows causality from public expenditure to national income.

Keynes categorized public expenditure as an exogenous variable that can generate economic growth instead of an endogenous phenomenon. Hereby, Keynes believed the role of the government to be crucial as it can avoid depression by increasing aggregate demand and thus, switching on the economy again by the multiplier effect. It is a tool that brings stability in the short run but this needs to be done cautiously as too much public expenditure leads to inflationary situations while too little of it leads to unemployment. Therefore, the Keynesian model of government intervention revealed that there is a functional relationship between fiscal policy and industrial development through increased effective demand in the market. That is increased effective demand through increased government expenditure will therefore increase the level of industrial development in the economy.

Methodology

The study employed the *ex-post facto* research design in obtaining, analyzing and interpreting the data and adopted the secondary method of data collection and the data were sourced from the Central Bank of Nigeria (CBN). Autoregressive Distributed Lagged (ARDL) was used for the estimation and this procedure was developed by Pesaran and Shin (1999) which was later expanded by Pesaran, Shin, and Smith (2001) and the procedure allows the researcher to use variables that are not integrated in the same order. Also, the error correction model (ECM) was used to establish the short-run and long-run causal relations between fiscal policy indicators and the manufacturing industrial sector in Nigeria.

Model Specification

The initial model was adopted from the work of Yahaya (2020) which examined the relationship between fiscal policy and economic development using the human development index (HDI) which was stated as follows:

$$gdp = \alpha_0 + \beta_1 grev + \beta_2 gexp + \beta_3 gdbt + \beta_4 inv + \beta_5 trd + \beta_6 pop + \beta_7 infl + \beta_8 traccor + Ut \qquad (1)$$

Where:
GDP is the Gross Domestic Product (Per Capita), GREV is the Government revenue as a percentage of GDP, GEXP is the Government Expenditure as a percentage of GDP, GDBT is the Government Debt as a percentage of GDP, INV is Government Investments as a percentage of GDP, TRD is the Trade as a percentage of GDP, POP is the Population headcount in millions, INFLA is the Inflation Rate, TRACCOR is the Transparency, Accountability, and Corruption Index and β_0 is the constant term, 't' is the time trend and 'ε' is the random error term. Equation (1) was modified and specified as follows:

$$\text{Thus, } Y = f(X) \tag{2}$$

Equation 2 shows the structural relationship between fiscal policy indicators and the manufacturing industrial sector in Nigeria is stated in the equation

$$MDS = f(\text{CEX}, \text{REX}, \text{NTX}, \text{OTX}, \text{EXD}, \text{DMD}) \tag{3}$$

Therefore, below are the specified Autoregressive Distributed Lagged (ARDL) and the Error Correction Model (ECM) which are as follows:

$$mds_t = \alpha_0 + \sum_{a=1}^{p} \alpha_{1i} mds_{t-1} + \sum_{b=1}^{q} \alpha_{2i} cex_{t-1} + \sum_{c=1}^{q} \alpha_{3i} rex_{t-1} + \sum_{d=1}^{q} \alpha_{4i} ntx_{t-1} + \sum_{e=1}^{q} \alpha_{5i} otn_{t-1} + \sum_{f=1}^{q} \alpha_{6i} exd_{t-1} + \sum_{g=1}^{q} \alpha_{7i} dmd_{t-1} \tag{4}$$
$$+\alpha_{8i} \Delta mds_{t-1} + \alpha_{9i} \Delta cex_{t-1} + \alpha_{10i} \Delta rex_{t-1} + \alpha_{11i} \Delta ntx_{t-1} + \alpha_{12i} \Delta otx_{t-1} + \alpha_{13i} \Delta exd_{t-1} + \alpha_{14i} \Delta dmd_{t-1} + \mu_t$$

Therefore, equation (4) was used to estimate and analyzed the long-run impact of fiscal policy indicators on the manufacturing industrial sector in Nigeria. From equation (4), MDS is the manufacturing industrial sector contribution to the gross domestic product in Nigeria and represents the manufacturing industrial sector in Nigeria which is the dependent variable while the following are the independent variables: CEX is the government capital expenditures, REX is the government recurrent expenditures, NTX is the non-oil taxation in Nigeria, OTX is the oil taxation in Nigeria, EXD is the public external debt and DMD is the public domestic debt in Nigeria. Also, the Error Correction Model (ECM) that was used to examine the impact of fiscal policy indicators on the manufacturing industrial sector in Nigeria is specified as follows:

$$mds_t = \alpha_0 + \sum_{a=1} \alpha_{1i} \Delta mds_{t-1} + \sum_{b=1} \alpha_{2i} \Delta cex_{t-1} + \sum_{c=1} \alpha_{3i} \Delta rex_{t-1} + \sum_{d=1} \alpha_{4i} \Delta ntx_{t-1}$$
$$+ \sum_{e=1}^{q} \alpha_{5i} \Delta otn_{t-1} + \sum_{f=1}^{q} \alpha_{6i} \Delta exd_{t-1} + \sum_{g=1}^{q} \alpha_{7i} \Delta dmd_{t-1} + \lambda ecm_{t-1} + \mu_t \tag{5}$$

Therefore, equation (5) was used to estimate and analyze the short-run impact of fiscal policy indicators on the manufacturing industrial sector in Nigeria. The negative sign of the coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value.

Presentation and Discussion of Results

Descriptive Statistics

Table 1: Descriptive Summary

	MDS	CEX	REX	NTX	OTX	EXD	DMD
Mean	5176.913	994.1328	2922.107	1635.771	4000.763	3149.953	4707.438
Median	2147.435	508.7500	1216.050	621.6000	2942.900	961.8750	1448.120
Maximum	27508.50	6335.580	15553.55	7944.560	41097.00	18702.25	22210.36
Minimum	45.96000	6.400000	15.60000	6.400000	19.00000	100.7900	36.79000
Std. Dev.	7136.977	1447.850	4175.058	1982.140	6882.233	4475.587	6073.920
Skewness	1.850603	2.264431	1.807969	1.394123	4.492415	2.150309	1.385671
Kurtosis	5.661529	7.531564	5.202839	4.457440	24.85684	6.998463	3.874772
Jarque-Bera	31.17399	61.56850	26.89125	14.84767	837.6732	51.72453	12.66834
Probability	0.000000	0.000000	0.000001	0.000597	0.000000	0.000000	0.001775
Sum	186368.9	35788.78	105195.9	58887.76	144027.5	113398.3	169467.8
Sum Sq. Dev.	1.780000	73369401	6.100000	1.38000	1.660000	7.010000	1.29000
Observations	36	36	36	36	36	36	36

Source: Researcher's Computation Using EViews-12 (2024)

Table 2 revealed that the manufacturing industrial sector in Nigeria (MDS), government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), oil taxation in Nigeria (OTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) are mesokurtic as their kurtosis values are greater than three (3). Also, the Jarque-Bera probability shows that manufacturing industrial sector in Nigeria (MDS), government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), oil taxation in Nigeria (OTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) are not normally distributed as their probability values did not pass the normality test at 1%, 5%, and 10%.

Stationary Tests (Unit Root Tests)

This section shows the unit root of the variables using the Augmented Dickey-Fuller (ADF) Test to check the stationary at a 5 percent level of significance.

Table 2: Unit Root Test Result

Variable	**Augmented Dickey-Fuller (ADF) Test**		
	@ Level	@ 1st Diff.	Status
MDS	-	-3.913099**	1(1)
CEX		-5.837608**	1(1)
REX	-	-5.138659**	1(1)
NTX	-	-3.448204***	1(1)
OTX	-6.271953**		1(0)
EXD	-	-4.027364**	1(1)
DMD		-4.746689**	1(1)
Asymptotic Critical Values			
1%	-3.639407	-3.646342	
5%	-2.951125	-2.954021	
10%	-2.614300	-2.615817	
**** implies significance at 1% level, **implies significance at 5% level and *** implies significance at 10%***			

Source: Researcher's Computation Using EViews-12 (2023)

Table 2 shows the stationary test of the ADF tests results revealed that all the variables manufacturing industrial sector in Nigeria (MDS), government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) are stationary at first difference which means that they are integrated of order I(I) at a 5% level of significance except oil taxation in Nigeria (OTX) which was integrated of 1(0) and requires the ARDL Bound Test to show if the variables are co-integrated and furthermore, taking into account the manufacturing. Given the mix result, as shown by ADF tests as well as the order of integration of the variables, the long-run relationship among the variables will be tested using the ARDL model which can capture the characteristics of a mixture of 1(0) and 1(1) of the variables as postulated by Pesaran, et al. (2001).

Co-integration of ARDL-Bounds Test

This section shows the ARDL co-integration bounds test of the variables used in this paper.

Table 3: Manufacturing Model Co-integration ARDL Bound Tests Results

Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
		Asymptotic: n=1000		
F-statistic	19.21749	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Source: Author's Computation, using E- views 12, 2024

Table 3 shows the Autoregressive Distributed Lagged (ARDL) Bound Co-Integration Test Using the ARDL Bound test with critical value (Pesaran, Shin and Smith, 2001), the variables were co-integrated at a 5 per cent level of significance since the Wald F- statistics of 19.21749 is greater than the critical lower and upper bound 2.27 and 3.28 respectively. This implies that the manufacturing industrial sector in Nigeria (MDS), government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), oil taxation in Nigeria (OTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) are co-integrated and the study proceeded to use the Autoregressive Distributed Lagged (ARDL) for the estimation and analysis.

Presentation and Interpretation of Results

This section presented the long-run and short-run results of the ARDL regression analysis where the manufacturing industrial sector in Nigeria is the dependent variable while government capital expenditures in Nigeria, government recurrent expenditures in Nigeria, non-oil taxation in Nigeria, oil taxation in Nigeria, public external debt in Nigeria are the independent variables.

Table 4: Manufacturing Sector Model of the ARDL Estimation Results
Dependent Variable: MDS

Co-integrating Estimates (ECM Estimates)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(MDS(-1))	-1.027380	0.103980	-9.880514	0.0000
D(REX)	0.041341	0.091261	0.452994	0.6560
D(REX(-1))	-0.445964	0.154879	-2.879441	0.0100
D(NTX)	1.159517	0.142363	8.144791	0.0000
D(OTX)	-0.028943	0.008805	-3.287129	0.0041
D(OTX(-1))	0.039881	0.010461	3.812242	0.0013
D(DMD)	-1.365697	0.154130	-8.860662	0.0000
D(DMD(-1))	-1.111354	0.174429	-6.371395	0.0000
CointEq(-1)*	-0.453177	0.031013	-14.61259	0.0000
R-squared	0.984966			
Adjusted R-squared	0.980156			
F-statistic	2276.329			
Prob. (F-statistic)	0.000000			
Durbin-Watson stat	2.041740			
Long Run				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CEX	-0.115977	0.767724	-0.151066	0.8816
REX	2.738314	0.967652	2.829855	0.0111
NTX	0.488111	0.823916	0.592428	0.5609
OTX	-0.289777	0.125358	-2.311602	0.0328
EXD	-0.062276	0.086434	-0.720502	0.4805
DMD	0.999094	0.188969	5.287077	0.0001
C	506.6665	240.7521	2.104515	0.0496

Source: Researcher's Computation Using EViews-12 (2024)

From Table 4 the value of F-statistics of 2276.329 and the probability values of 0.0000, indicated that there is a long-run relationship between the fiscal policy indicators in Nigeria and manufacturing industrial sector in Nigeria. The R-square value of 0.98 revealed that fiscal policy indicators variables in Nigeria which government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), oil taxation in Nigeria (OTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) jointly accounted for about 99 percent of the variation in the manufacturing industrial sector in Nigeria during the period under review; while the remaining 1 percent accounted for by other factors outside the model.

The short-run result and the ECT show the 1-period lag Error Correction Term. Its value of -0.45 indicates that it is negative and statistically significant with a probability value of 0.00 at a 5 percent significant level. This means that the average speed of adjustment from the short run to the long run should there be any disequilibrium is 45%. While, the short-run coefficient and probability values of each variable revealed that the previous value of manufacturing industrial sector in Nigeria, government recurrent expenditures in Nigeria, oil taxation in Nigeria, the current value of public domestic debt in Nigeria and the previous public domestic debt in Nigeria have negative and significant impact on the manufacturing industrial sector in Nigeria at 5 percent significant level. Also, the coefficient and probability value revealed that the government recurrent expenditures in Nigeria has a negative and insignificant impact on manufacturing industrial sector in Nigeria at 5 percent significant level. While, the coefficient and probability values of non-oil taxation in Nigeria and previous value of oil taxation in Nigeria revealed that they have a positive and significant impact on manufacturing industrial sector in Nigeria at 5 percent significant level.

The long-run regression results revealed that government capital expenditures in Nigeria has a negative impact on manufacturing industrial sector in Nigeria and the probability value of 0.8816 shows that government capital expenditures in Nigeria has an insignificant impact on manufacturing industrial sector in Nigeria. On the other hand, government recurrent expenditures in Nigeria has a positive impact on manufacturing industrial sector in Nigeria and the probability value of 0.0111 shows that government recurrent expenditures in Nigeria has a significant impact on manufacturing industrial sector in Nigeria.

Also, non-oil taxation in Nigeria has a positive impact on manufacturing industrial sector in Nigeria and the probability value of 0.5609 shows that non-oil taxation in Nigeria has an insignificant impact on the manufacturing industrial sector in Nigeria. On the other hand, oil taxation in Nigeria has a negative impact on the manufacturing industrial sector in Nigeria. The probability value of 0.0328 shows that oil taxation in Nigeria significantly impacts the manufacturing industrial sector in Nigeria. Furthermore, public external debt in Nigeria negatively impacts the manufacturing industrial sector in Nigeria, and the probability value of 0.4805 shows that public external debt in Nigeria significantly impacts the manufacturing industrial sector in Nigeria. On the other hand, public domestic debt in Nigeria has a positive impact on the manufacturing industrial sector in Nigeria and the probability value of 0.0001

shows that public domestic debt in Nigeria has an insignificant impact on the manufacturing industrial sector in Nigeria.

Hypotheses Testing

Table 5: Hypotheses Testing of ARDL Results

Hypotheses	Tc	Tt	Decision Rule	Remark
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	0.15	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Accepted**
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	2.83	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Rejected**
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	0.59	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Accepted**
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	2.32	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Rejected**
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	0.72	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Accepted**
$H_0: \beta_4 = 0$ $H_1: \beta_4 > 0$	5.29	2.04	$Tc > Tt$ Reject H_0 $Tc < Tt$ Accept H_0	**Rejected**

Tc is the calculated T-Statistics, Tt is the table T-Statistics (Theoretical T-Statistics) and the decision rule is based on 5% level significance. While the Degree of Freedom is set as (N-K) = 31 (Gujarati & Sangeetha, 2007).

Source: Author's Computation, using E- views 12, 2023

The $\mathbf{H_{01}}$ which states that government capital expenditures in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was accepted at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 0.15 is less than the value of the table T-Statistics (Tt) of 2.04. This implies that the government capital expenditures in Nigeria has negative and insignificant impact on manufacturing industrial sector in Nigeria at the long run. While, the H_{02a} which states that government recurrent expenditures in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was rejected at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 2.83 is greater than the value of the table T-Statistics (Tt) of 2.04. This implies that the government recurrent expenditures in Nigeria has positive and significant impact on manufacturing industrial sector in Nigeria at the long run.

On the other hand, While, the H_{03a} which states that non-oil taxation in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was accepted at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 0.59 is less than the value of the table T-Statistics (Tt) of 2.04. This implies that the non-oil taxation in Nigeria has positive and insignificant impact on manufacturing industrial sector in Nigeria at the long run. While, The H_{04a} which states that oil taxation in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was rejected at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 2.3 is greater than the value of the table T-

Statistics (Tt) of 2.04. This implies that the oil taxation in Nigeria has a negative and significant impact on manufacturing industrial sector in Nigeria at the long run.

Furthermore, H_{05a} which states that public external debt in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was accepted at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 0.72 is less than the value of the table T-Statistics (Tt) of 2.04. This implies that the public external debt in Nigeria has a negative and insignificant impact on manufacturing industrial sector in Nigeria at the long run. And finally, the H_{06a} which states that public domestic debt in Nigeria has no significant impact on manufacturing industrial sector in Nigeria was rejected at the 5% level of significance given that the value of the calculated T-Statistics (Tc) of 5.29 is greater than the value of the table T-Statistics (Tt) of 2.04. This implies that the public domestic debt in Nigeria has a positive and significant impact on the manufacturing industrial sector in Nigeria in the long run.

Post-Diagnostic Checks

Table 6: Heteroskedasticity and Serial Correlation Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity			
F-statistic	1.012918	Prob. F(15,18)	0.4838
Obs*R-squared	15.56280	Prob. Chi-Square(15)	0.4117
Scaled explained SS	3.047559	Prob. Chi-Square(15)	0.9996
Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.968949	Prob. F(2,16)	0.4007
Obs*R-squared	3.673147	Prob. Chi-Square(2)	0.1594

Source: Author's Computation, using E- views 12, 2023

Table 6 shows the test for Heteroskedasticity. It indicates that the variables are free from the problem of Heteroskedasticity since the p-values of F-stat. and Obs*R-squared of 1.01 and 15.56 respectively are greater than the 5% significance level. This outcome is further strengthened by the p-value of 0.48 for the Scaled explained SS which also suggests the absence of Heteroskedasticity in the model of the impact of fiscal policy measures on manufacturing industrial sector in Nigeria and this implies that the absence of heteroskedasticity among the variables which are manufacturing industrial sector in Nigeria, government capital expenditures in Nigeria, government recurrent expenditures in Nigeria, non-oil taxation in Nigeria, oil taxation in Nigeria, public external debt in Nigeria and public domestic debt in Nigeria. Similarly, the Breusch-Godfrey Serial Correlation LM Test result revealed that there is the absence of serial correlation among the economic variables given the p-values of F-stat. and Obs*R-squared of 0.968 and 3.673 respectively which are greater than the 5% significance level and this implies that there is absence of Serial Correlation among manufacturing industrial sector in Nigeria, government capital expenditures in Nigeria, government recurrent expenditures in Nigeria, non-oil taxation in Nigeria, oil taxation in Nigeria, public external debt in Nigeria and public domestic debt in Nigeria.

Normality Test

Figure 1: Manufacturing Sector Model Normality Test

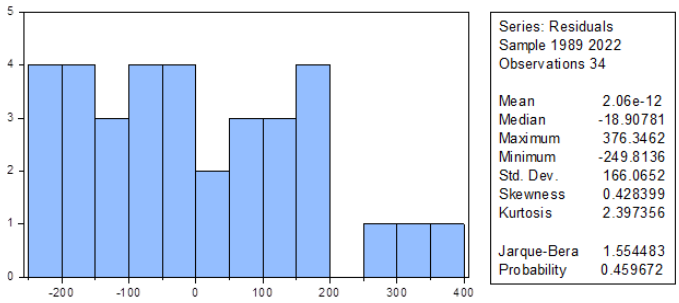

Figure 1 Shows the manufacturing sector model normality test and the Jarque-Bera value of 1.554483 and the probability value of 0.459672 revealed that the model of the impact of fiscal policy indicators on manufacturing industrial sector in Nigeria is normally distributed. This implies that the model and the variables used in the model which are manufacturing industrial sector in Nigeria (MDS), government capital expenditures in Nigeria (CEX), government recurrent expenditures in Nigeria (REX), non-oil taxation in Nigeria (NTX), oil taxation in Nigeria (OTX), public external debt in Nigeria (EXD) and public domestic debt in Nigeria (DMD) are normally distributed.

Implication of Findings

The long run regression analysis of manufacturing industrial sector output model revealed that the fiscal policy indicators jointly have strong relationship with the manufacturing industrial sector output in Nigeria suggested by the 98 percent of the R-Square and the F-statistics value of 2276.32 revealed that there is significant relationship between fiscal policy indicators and manufacturing industrial sector output in Nigeria. Thus, based on the coefficient and probability of the individual variables, the government capital expenditures in Nigeria was found to have a negative and insignificant impact on manufacturing industrial sector output in Nigeria.

While government recurrent expenditures in Nigeria had a positive and significant impact on manufacturing industrial sector output in Nigeria. While, non-oil taxation in Nigeria had a positive and insignificant impact on manufacturing industrial sector output in Nigeria and the other hand, oil taxation in Nigeria was found to negative and significant impact on manufacturing industrial sector output in Nigeria. Also, the result revealed that public external debt in Nigeria has a negative and insignificant impact on manufacturing industrial sector output in Nigeria while public domestic debt in Nigeria was found to have a positive and significant impact on manufacturing industrial sector output in Nigeria.

Conclusion and Recommendations

In conclusion, the study revealed that in the fiscal policy and manufacturing model two out of six fiscal policy indicators or variables have positive and significant effect on manufacturing industrial output in Nigeria which are government recurrent expenditures in Nigeria and

public domestic debt in Nigeria and this implies that these two are best fiscal policy instruments to improve the manufacturing industrial output in Nigeria. Also, though the non-oil taxation in Nigeria has a positive effect on manufacturing industrial output in Nigeria its effect was insignificant in improving the level of manufacturing industrial output in Nigeria while, government capital expenditures in Nigeria, oil taxation in Nigeria and public external debt in Nigeria have negative effect on manufacturing industrial output in Nigeria and the study revealed that oil taxation in Nigeria has negative and significant effect on manufacturing industrial output in Nigeria meaning that the higher the oil taxation in Nigeria the lower the level of manufacturing industrial output in Nigeria. The following recommendations were raised from the research findings:

i. The government through Federal Ministry of Finance and other related Agencies should design a mechanism to track the government capital expenditures in Nigeria to ensure that projects are industrial driven especially the infrastructural projects for a massive increase in industrial output in Nigeria but manufacturing.

ii. Also, government Federal Ministry of Finance and other related Agencies should increase by 10 percent the recurrent expenditures at all levels to the real sector and should be industrial growth driven to increase its significant impact on manufacturing industrial output in Nigeria through effective demand.

iii. Government through Federal Ministry of Finance and other related Agencies should design a mechanism to maintain current level of the non-oil taxation in Nigeria because it has positive and significant effect on both manufacturing industrial output in Nigeria.

iv. On the other hand, government through Federal Ministry of Finance and other related Agencies should design a mechanism to revisit the current level of the oil taxation in Nigeria because it has negative and significant effect on manufacturing industrial output in Nigeria. Therefore, oil taxation in Nigeria should be revisit the policy with respect to manufacturing industrial output in Nigeria.

v. Also, government through Federal Ministry of Finance and other related Agencies should design a mechanism to revisit the current level of the public external debt in Nigeria to improve the level of significant and make it effect positive on both manufacturing industrial output in Nigeria.

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