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TAXATION AND MANUFACTURING SECTOR DEVELOPMENT: EVIDENCE FROM NIGERIA

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Abstract

Despite the substantial tax burden placed on the manufacturing sector in Nigeria, its performance continues to deteriorate due to significant infrastructural deficits. Empirical evidence on the impact of taxation on the manufacturing sector in Nigeria has been inconsistent. This study investigates the impact of company income tax, personal income tax, value-added tax, petroleum profit tax, and the corruption perception index on the development of the Nigerian manufacturing sector. The corruption perception index is included as a control variable to account for the government's role in tax administration and revenue utilization. The study utilizes the Johansen cointegration test, error correction mechanism, and Granger causality test on annual time-series data from 1996 to 2022. The findings indicate that personal income tax and petroleum profit tax significantly contribute to manufacturing sector development, while company income tax has an insignificant positive impact. Conversely, value-added tax and corruption strongly hinder the sector's development. The study recommends efficient utilization of tax revenue for infrastructural development to enhance sustainable growth in the manufacturing sector.

Introduction

In spite of a nation's abundant human and natural resources, achieving sustainable economic growth and development is challenging without an enhanced manufacturing capacity. The manufacturing sector plays a crucial role in a country's growth and development (Olawunic, 2020). To optimize the manufacturing sector, a conducive environment is necessary. The government must provide essential infrastructural facilities, such as a reliable road network, stable power supply, and national security. Taxation becomes a vital fiscal policy tool for

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acquiring funds needed for infrastructural development, thereby improving manufacturing sector performance (Ewubare & Ozo-Eson, 2019).

Issues surrounding taxation and its impact on economic activities have sparked controversy among scholars. Some argue that increased taxes may negatively affect the economy by reducing disposable income and, consequently, aggregate purchasing power. Others contend that if tax revenue is directed towards productive enterprises and infrastructure, it could lead to improved manufacturing sector performance in the long run (Barro, 1974; Perotti, 2002; Mountford & Uhlig, 2009; Huang & Frentiz, 2014; Chem et al., 2017; Popoola et al., 2018; Oladipo et al., 2019).

Despite the significant contribution of the manufacturing sector to tax revenue in Nigeria, the sector faces infrastructural limitations, hindering productivity (Banjoko et al., 2012; Ojewale, 2022). This raises doubts about the positive correlation between increased tax revenue and improved infrastructural development in Nigeria.

Umofia (2018) noted that the Nigerian manufacturing sector's performance has been unsatisfactory, attributing it to factors such as poor tax administration, excessive and multiple taxation, and a lack of clear tax incentive policies. Nigeria ranks 181 out of 189 countries globally in the "ease of paying taxes" on the World Bank Ease of Doing Business Index. Excessive taxation poses a major obstacle to doing business, impacting the manufacturing sector in Nigeria. Many manufacturing firms have left Nigeria due to burdensome taxes, with the remaining ones resorting to tax evasion and avoidance. Corruption among tax officials exacerbates the situation, leading to embezzlement of public funds (Chude & Chude, 2015; Nwoge et al., 2018; Oluwole et al., 2020).

Conceptual Clarifications and Literature Review

2.1 Conceptual Clarifications

2.1.1 Taxation

Taxation involves a government imposing compulsory unrequited payments on citizens and business entities. A tax is the amount of money levied by the government. For this study, four categories of taxes are considered: company income tax, personal income tax, value-added tax, and petroleum profit tax.

2.1.2 Manufacturing Sector Development

The manufacturing sector involves the processing of raw materials or parts into finished or semi-finished goods. Manufacturing sector development refers to the improvement in the performance of the manufacturing sector over time. In this study, manufacturing sector development is measured in terms of manufacturing sector output per capita, defined as the total output of the manufacturing sector divided by Nigeria's total population in a year, adjusted for inflation.

2.2 Theoretical Literature Review

2.2.1 Theories of Taxation

Theories of taxation are theoretical propositions that explain the practice of taxation. These theories evolved alongside the development of the various schools of thought in economic history.

The classical theory of taxation held sway for a long time. Consequently, taxation was only assigned the fiscal responsibility of providing state revenue. Adam Smith is generally considered the father of scientific theory of taxation. He gave a definition of the taxation system, indicating the main conditions for its formation. Smith put forward four main principles of taxation: equity, determination, convenience and thrift of tax administration (Dome, 1998). Adam Smith’s work was later developed by David Ricardo, J. S. Mills, and W. Petty. All the theoretical deliberations and scientific debates over those years were centered on one singular aspect, that the execution of the taxation’s function – the provision of state revenue is achieved on the basis of the principles of equity and justice (Weinzier, 2014).

The classical approach to the nature and role of taxation changed in the course of many centuries due to complexities in economic relations and the need to intensify the state in economic regulation. As a result, new theories of taxation emerged. These were the Keynesian and neo-classical theories of taxation (Palley, 2012). The Keynesian theory of taxation was initiated by John M. Keynes. He advocated state interventions in the process of market economy regulation. According to Keynes, sustainable economic development must be based on market expansion and an associated increase in consumption. This implies that state intervention is achieved at the level of effective demand (Palley, 2012). Keynes argued that large amounts of savings hinder economic development since they represent passive form of income which are not invested in productive activities. He therefore suggested that surplus savings must be subtracted with the help of taxation. This explains why, according to Keynes, the state must intervene with the help of taxation in order to finance investment and cover public expenditure (Pressman, 1997). Keynes contended that high level progressive taxation is necessary and that low tax rates result in decreased state revenue which consequently, leads to economic instability. In other worlds, high taxes stimulate economic activity; influence economic stability, and act as an integrated flexibility mechanism (Pressman, 1997).

The neoclassical theory of taxation is based on the premise that the state is obligated to remove impediments to the operation of free market competition given that the market can regulate itself without state intervention. The theory therefore differs from the Keynesian theory as it assigns a rather passive role to state regulation of the economic process (Kotlikoff, 1984). According to the neoclassical theory, tax policies should be developed under the assumption that taxes must be as small as possible and that firms should be given significant tax reliefs. Otherwise, a high tax burden would adversely affect economic activities and restrain the investment policies of firms, which would bring about a decline in production and consequently, economic recession. The theory posits that a restricted taxation policy would allow the market to provide independently for rapid development and a significant expansion of the taxation basis (Dotsey & Mao, 1994). One important contributor to the neoclassical theory of taxation is Arthur Laffer. He used the “Laffer Curve” to explain that an increase in the tax burden leads to an increase in state revenues only up to a level where they start to decline. According to Laffer, the higher tax rate, the higher the motivation for tax evasion. When the tax rate reaches a certain limit, entrepreneurship incentives are suppressed, the motivations for production expansion are reduced, taxable income declines, and consequently, a part of the taxpayers will move from the legitimate to the underground sector of the economy. Laffer recommended 30 percent of income as the highest tax rate to be deducted for state budget purpose (Hemming & Kay, 1980).

2.3 Empirical Literature Review

Several studies have explored the impact of taxation on manufacturing sector performance in Nigeria, primarily focusing on manufacturing sector output as a measure of performance. However, there is a lack of consistency in the findings among these studies.

Ojelabi (2023) investigated the impact of company income tax on 44 listed manufacturing companies in Nigeria, revealing a significant positive impact on firms' profit after tax. Similarly, Olumuyiwa and Olatunji (2022) found, in a sample of 10 quoted manufacturing firms, that the effective tax rate and debt-GDP ratio have a significant negative impact on earnings per share.

Sakanko et al. (2022) established that company income tax and import duties positively impact manufacturing sector output, while value-added tax has a negative impact on manufacturing sector output in Nigeria. Patrick (2022) discovered that company income tax has an insignificant positive impact on real GDP, petroleum profit tax has a significant positive impact on real GDP, and value-added tax has an insignificant positive impact on real GDP.

Abiola et al. (2022) identified a significant positive impact of company income tax on the profit after tax of 15 listed consumer goods manufacturing companies. Adefunke and Osiomon (2022) found a significant positive impact of company income tax on the profitability of 12 selected listed companies.

Etim et al. (2020) reported an insignificant negative impact of company income tax on manufacturing sector output, with personal income tax and petroleum profit tax showing significant positive impacts. Ogu and Kem (2020) concluded that company income tax, petroleum profit tax, and manufacturing capacity utilization have an insignificant positive impact on industrial sector output, while custom and excise duties have an insignificant negative impact. Olawumi and Adesanmi (2020) revealed that company income tax and manufacturing capacity utilization have an insignificant negative impact on manufacturing sector output.

Nwaorgu et al. (2020) observed that corporate tax has an insignificant negative impact on return on equity and a significant positive impact on the debt-equity ratio in Nigeria. Olaoye and Alade (2019) found that company income tax, value-added tax, withholding tax, and education tax have a significant impact on profit after tax of selected manufacturing firms.

Imide (2019) reported an insignificant positive impact of company income tax on manufacturing sector output. Oladipo et al. (2019) found a significant positive impact of company income tax on manufacturing sector output, while value-added tax had a significant negative impact.

Ewubare and Ozo-Eson (2019) established that corporate income tax and petroleum profit tax have a significant positive impact on manufacturing sector output. Value-added tax had an insignificant negative impact, while excise duty had an insignificant positive impact on manufacturing sector output in Nigeria. Nwoge et al. (2018) observed that company income tax has a significant positive impact on net income and an insignificant positive impact on return on equity.

Adefeso (2018) found that government corporate tax policy has a significant positive impact on the performance of selected 54 listed manufacturing firms in Nigeria. Notably, the literature reviewed indicates a lack of consistency in the findings of previous studies in Nigeria. For example, some studies (Olaoye & Alade, 2019; Ewubare & Ozo-Eson, 2019; Oladepo et al., 2019; Ogu & Kem, 2020; Adefunke & Osiomon, 2022; Abiola et al., 2022; Sakanko et al., 2022; Ojelabi, 2023) found a positive impact of company income tax on manufacturing sector performance, while others (Nwaorgu et al., 2020; Olawumi & Adesanmi, 2020; Etim et al., 2020; Patrick, 2022) identified a negative impact. Similarly, the impact of value-added tax on manufacturing sector performance varies among studies (Olaoye & Alade, 2019; Ewubare & Ozo-Eson, 2019; Oladipo et al., 2019; Sakanko et al., 2022). Additionally, corruption perception index has not been consistently included in previous studies in Nigeria. To address these gaps, this study employs manufacturing sector output per capita as a more comprehensive measure of manufacturing sector development, capturing the accessibility of manufactured goods to the average Nigerian. The inclusion of the corruption perception index aims to account for corrupt practices in tax matters and potential embezzlement of tax proceeds by government officials in Nigeria.

3. Method of Study

3.1 Model Specification

The model used for this study is specified based on the neoclassical theory of taxation and the analytical model used by Etim et al (2020). Etim et al (2020) model is expressed in its mathematical form as follows:

MO = f(CIT, PIT, VAT, PPT) ……1

where MO = Manufacturing Sector Output

CIT = Company Income Tax

PIT = Personal Income Tax

VAT = Value-Added Tax

PPT = Petroleum Profit Tax
f = Symbol of Functionality
The adopted model was slightly modified to allow for the inclusion of the variables of the present study. Therefore, the functional form of the model, on the basis of which the econometric model is built, is expressed as follows:
MSOPC = f(CIT, PIT, VAT, PPT, CPI) ……..……. 2
Where MSOPC = Manufacturing Sector Output Per Capita (a proxy for manufacturing sector development).
CIT = Company Income Tax
PIT = Personal Income Tax
VAT = Value=Added Tax
PPT = Petroleum Profit Tax
CPI = Corruption Perception Index
f = Symbol of Functionality
MSOPC is the dependent variable while CIT, PIT, VAT, PPT and CPI are the explanatory variables.
The ordinary least squares multiple regression equation based on the mathematical model above is expressed as follows:
$MSOPC = \beta_0 + \beta_1 CIT + \beta_2 PIT + \beta_3 VAT + \beta_4 PPT + \beta_5 CPI + U$ …….. 3
where β_0 is the intercept term, β_1-β_5 are the parameter estimates of the explanatory variables while U is the error term. All other variables are as earlier defined. Transforming equation 3 into logarithmic form, we obtained the following equation:
$MSOPC = \beta_0 + \beta_1 LCIT + \beta_2 LPIT + \beta_3 LVAT + \beta_4 LPPT + \beta_5 CPI + U$ ……..…….. 4
where L is the natural logarithm of variables where applicable. All the other variables are as earlier interpreted.

3.1.1 Apriori Theoretical Expectations

Based on a priori theoretical reasoning, the following signs of the parameter estimates are expected.
$MSOPC = \beta_0 + \beta_1 LCIT + \beta_2 LPIT + \beta_3 LVAT + \beta_4 LPPT + \beta_5 CPI + U$
$\beta_1>0$, $\beta_2>0$, $\beta_3>0 + \beta_4>0$, $\beta_5> 0$
The above signs of the parameter estimates implies that an increase in the revenue realized from the four categories of taxes will lead to an improvement in manufacturing sector development while an increase in the corruption perception index score (i.e. lower level of corruption) will be associated with improved manufacturing sector development.

3.2 Description of Variables

Dependent Variable

The dependent variable for this study is manufacturing sector development, measured in terms of manufacturing sector output per capita. This is defined as the total output of the Nigerian manufacturing sector divided by the total population of the country in a year. It represents the total contribution of the manufacturing sector to Nigeria's real gross domestic product divided by the total population in a year.

Explanatory Variables

- **Company Income Tax (CIT):** The total amount of money realized from the tax imposed by the government on the profits of registered companies in Nigeria.
- **Personal Income Tax (PIT):** The total amount of money realized as revenue from the tax levied on the income of a person or a
- n individual.

- **Value-Added Tax (VAT):** Revenue realized from a consumption tax on goods and services levied at each stage of the production or supply chain where value is added, from the initial stage of production to the point of sale to the final consumer.
- **Petroleum Profit Tax (PPT):** Total revenue realized from tax imposed on the profit or income of companies engaged in upstream petroleum operations in lieu of company income tax.
- **Corruption Perception Index (CPI):** An index used to score and rank countries/territories based on how corrupt a country's public sector is perceived to be by experts and business executives. The score ranges from 0 to 100, where 0 means highly corrupt and 100 means very clean. For this study, the CPI compiled by Transparency International is used.

3.3 Nature and Sources of Data

The study utilized annual time-series data for the period 1996 to 2022. The data were obtained from the Central Bank of Nigeria annual statistical bulletin for 2021, the World Bank Development Indicators (various years), and Transparency International (various years).

3.4 Techniques of Data Estimation

Since the study used time-series data, the analytical procedure began with a stationarity test conducted using the Augmented Dickey-Fuller (ADF) unit root test. The ADF unit root test checks whether the datasets are stationary or not and determines their order of integration. The ADF unit root test in its general form takes the form of the following regressions:

$\Delta Y_t = a_o + a_1 y_{t-1} + \quad a y_i + \varepsilon_t$ ……..…….…….5

$\Delta Y_t = a_o + a_1 y_{t-1} + \quad a_1 \Delta y_t + a_t + \varepsilon_t$ …….……6

where y_t is a time-series, t is a linear time trend, Δ is the first difference operator, a_0 is a constant, n = the optimum number of lags in the dependent variable and ε_t is the error term.

Based on the result of the ADF unit root test, the Johansen cointegration test was used to test for the presence or otherwise of long-run relationships among the variables of the study. Johansen (1988) and Johansen & Juseluis (1990) formulated the test based on the vector Auto regressive (VAR) model. The test starts with a P-lag VAR model expressed as follows:

$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \text{---} + Ap\, Y_{t-p} + \beta X_t + \varepsilon_t$ …….. 7

where Y_t is a K-vector of non-stationary endogenous variables that are generally integrated of order one (I(1)); X_t is a d-vector of exogenous deterministic variable; A_1, A_2, Ap and β are matrices of coefficients to be estimated; while εt is a vector of innovation that may be contemporaneously correlated with their own lagged values and the variables on the right hand side. Considering that most economic time-series are non-stationary, the VAR model is represented as follows:

$\Delta Y_t = \pi Y_{t-1} + \sum_{i=1}^{p-1} \Upsilon_i \Delta Y_{t-1} + \beta X_p + \varepsilon_t$ ……. 8

Where $\pi = \sum_{i=1} A_{i-1}$ and $\Upsilon = - \sum_{j=i+1} Aj$

The trace and max-eigen statistics are used to determine the number of cointegrating vectors. These tests statistics which were developed by Johansen (1988) are expressed as follows:

$\lambda_{trace\,(r)} = -T \quad \log (1 - \lambda_t)$ ……..……. 9

$\lambda_{max\,(r/r+1)} = -T \sum_{i=r+1} \log (1-\lambda_{r+1})$ …… 10

where T is the sample size and λ's are the estimated eigen values from the matrix. The trace statistic tests the null hypothesis (H_0) of r cointegrating equations against the alternative hypothesis (H_1) of n cointegrating equations. On the other hand, the max-eigen statistic tests the H_0 of r cointegrating equations against the H_1 of r+1 cointegrating equations.

The error correction model (ECM) was used to estimate the short-run dynamic behaviour of the time-series. Specifically, the ECM was used to measure the speed of adjustment of short-run disequilibrium to long-run equilibrium. Hence, following the ECM formulation, equation 4 can be expressed as follows:

$$\Delta MSOPC_t = \beta_0 + \beta_{1t}\Delta MSOPC_{t-1} + \beta_{2t}\Delta \log CIT_{t-1} + \beta_{3t}\Delta \log PIT_{t-1} + \beta_{4t} \log VAT_{t-1} + \sum_{i=1}^{n-1} \beta_{5t}\Delta \log PPT_{t-1} + \sum_{i=1}^{n-1} \beta_{6t}\Delta \log CPI_{t-1} + \lambda ECM_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 11$$

Where β_0 is the drift parameter or constant term, Δ is the first difference operator, the terms with the summation sign (Σ) (i.e, $\beta_{1t} - \beta_{6t}$) are the short-run coefficients, n is the ECM lag length, log is the natural logarithm, λ is the coefficient of the error correction term, and ε_t is the white noise error term. All other variables are as earlier defined.

The Granger causality test was employed to check if there is any causality among the variables. The Granger causality test, in its general formulation, involves the estimation of the following pair of regressions.

$$X_t = \sum_{i=1}^{n} a_i Y_{t-i} + \sum_{i=1}^{n} \beta_j X_{t-j} + U_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 12$$

$$Y_t = \sum_{i=1}^{n} \lambda_i y_{t-i} + \sum_{i=1}^{n} \pi_j X_{t-j} + U_{2t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 13$$

where it is assumed that the disturbance terms, U_{1t} and U_{2t}, are uncorrelated.

4. Presentation of Result and Discussion of Findings

4.1 Presentation of Result

4.1.1 Descriptive Statistics

The result of the descriptive statistics is presented in table 1.

Table 1: Descriptive Statistics Result

Variable	MSOPC	CIT	PIT	VAT	PPT	CPI
Mean	33.36857	719.4942	127.3242	306.9653	761.3706	21.24576
Median	31.16500	61.35000	35.70000	100.1500	168.8000	22.00000
Maximum	77.67000	4619.080	514.3400	1094.400	3201.320	28.00000
Minimum	22.06000	0.400000	0.407600	11.28660	3.746900	6.900000
Std. Dev.	11.36090	1309.780	165.5820	367.9384	953.2106	6.566787
Skewness	1.882900	1.980637	1.174865	0.790356	1.072004	-0.748983
Kurtosis	7.531712	5.528702	3.163393	2.033575	3.010911	2.167423
Jarque-Bera	60.75591	38.65055	9.708868	6.007093	8.044554	2.438973
Probability	0.000000	0.000000	0.007794	0.049611	0.017912	0.297614
Sum	1401.480	30218.76	5347.617	12892.54	31977.57	552.3900
Sum Sq. Dev.	5291.869	70336478	1124114	5550526	37253027	1204.689
Observations	27	27	27	27	27	27

Source: Author's Computation from E-view

The descriptive statistics results in Table 4.1 indicate that the mean values of the variables are 33.36857, 719.4942, 127.3242, 306.9653, 761.3706, and 21.24576 for MSOPC, CIT, PIT, VAT, PPT, and CPI, respectively. The standard deviation shows that CPI, with a standard deviation value of 6.566787, is the most stable variable, while CIT, with a standard deviation value of 1309.780, is the most unstable variable. The skewness statistic indicates that, except for CPI, which is negatively skewed, all the variables are positively skewed. The kurtosis statistic shows that VAT and CPI are platykurtic (i.e., their values are less than 3). This implies that their distributions

have lighter tails relative to the normal distribution. However, MSOPC, CIT, PIT, and PPT are leptokurtic (i.e., their values are greater than 3). This suggests that they have heavier tails relative to the normal distribution.

4.1.2 Unit Root Test Result

The result of the Augmented Dickey-Fuller (ADF) unit root test is presented in table 2.

Table 2: ADF Unit Root Test Result

Variable	ADF Test Statistic (At Levels)	Critical Values		ADF Test Statistic (At 1st Diff.)	Critical Values		Order of Integration
		1%	5%		1%	5%	
MSOPC	-2.703724	-3.605593	-2.936942	-4.724244*	-3.605593	-2.936942	I(1)
LCIT	-2.305111	-3.646342	-2.95401	-5.466308*	-3.64342	-2.954021	I(1)
LPIT	1.932386	-3.605593	-2.936942	-13.04103*	-3.605593	-2.936942	I(1)
LVAT	1.966833	-3.610453	-2.938987	-5.341092*	-3.610453	-2.938987	I(1)
LPPT	-1.810703	-3.600987	-2.936001	-8.229051*	-3.605593	-2.936942	I(1)
CPI	-1.800942	-3.610453	-2.938987	-6.134108*	-3.610453	-2.938987	I(1)

Source: Author's Computation from E-view

Note that * denotes rejection of the null hypothesis of unit root at the 1% critical value.

The ADF unit root test result in table 2 showed that none of the series are stationary at levels. However, they are all stationary at first difference (i.e, I(1)) at the 1% critical value.

4.1.3 Cointegration Test Result

The result of the Johansen cointegration test is presented in table 3. The trace and max-eigen tests were used to evaluate the result.

Table 3: Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.783757	112.6478	69.81889	0.0000
At Most 1*	0.464140	51.39364	47.85613	0.0224
At Most 2	0.360539	26.43833	29.79707	0.1161
At Most 3	0.190074	8.553135	15.49471	0.4083
At Most 4	0.003012	0.120655	3.841466	0.7283
Hypothesized No. of CE(s)	**Eigen Value**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None*	0.783757	61.25419	33.87687	0.0000
At Most 1	0.464140	24.95531	27.58434	0.1047
At Most 2	0.360539	17.88520	21.13162	0.1342
At Most 3	0.190074	8.432480	14.26460	0.3364
At Most 4	0.003012	0.120655	3.841466	0.7283

Source: Author's Computation from E-view

Trace test indicates 2 cointegrating equations at the 0.05 level.

Max-eigen test indicates 1 cointegrating equation at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
** Mackinnon-Haug-Michelis (1-99) p-values

From the Johansen cointegration test in table 3, the trace test indicated 2 cointegrating equations while max-eigen test indicated one cointegrating equation. This implies that there is long-run relationship between taxation and manufacturing sector development in Nigeria.

4.1.4 Estimated Long-Run Regression Result

The estimated long-run regression result obtained from the normalized cointegrating coefficients is reported in table 4.

Table 4: Long-Run Coefficients

MSOPC	LCIT	LPIT	LVAT	LPPT	CPI
1.000000	(0.037263)	0.862961	-1.332418	0.276029	0.813513
	(0.02548)	(0.32766)	(0.16184)	(0.02880)	(0.374608)
	(1.462441)	(2.633709)	(-8.232934)	(9.584340)	(2.171638)

Source: Author's Computation from E-view

Note: The figures in the first and second parentheses are the standard errors and t-statistics respectively.

4.1.5 Estimated Short-Run Regression Result

The result of the estimated short-run (ECM) regression result is presented in table 5.

Table 5: Error Correction Model (ECM) Result

Dependent Variable: MSOPC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	33.10436	1.074323	30.81417	0.0000
LCIT	0.007599	0.003636	2.089803	0.0458
LCIT(-2)	0.001200	0.003079	0.389625	0.6998
LPIT	-0.044476	0.019858	-2.239702	0.0393
LPIT(-1)	-0.061041	0.021214	-2.877314	0.0076
LVAT	-0.00423	0.014246	-0.149009	0.8826
LVAT(-1)	0.006870	0.018091	0.379726	0.7070
LPPT	0.001767	0.002368	0.746248	0.4617
LPPT(-3)	0.001258	0.001484	0.847480	0.4039
CPI	0.066274	0.061583	1.076174	0.0742
CPI(-2)	0.053852	0.021532	2.501022	0.0241
ECM(-1)	-0.853895	0.139995	-6.099454	0.0000
R-Squared = 0.708137		F-Statistic = 7.548398		
Adjusted R-Squared = 0.614325		Prob(F-statistic) = 0.000016		
		Durbin-Watson Stat. = 2.125582		

Source: Author's Computation from E-view

4.1.6 Granger Causality Test Result

The result of the pairwise Granger causality test is presented in table 6.

Table 6: Granger Causality Test Result

Lags: 2

Null Hypothesis	Obs.	F-Statistic	Prob.
LCIT does not Granger Cause MSOPC	25	0.01817	0.9820
MSOPC does not Granger Cause LCIT		0.00785	0.9922
LPIT does not Granger Cause MSOPC	25	0.00753	0.9925

MSOPC does not Granger Cause LPIT		0.21973	0.8038
LVAT does not Granger Cause MSOPC	25	0.08406	0.99196
MSOPC does not Granger Cause LVAT		2.16454	0.1299
LPPT does not Granger Cause MSOPC	25	0.14383	0.8665
MSOPC does not Granger Cause LPPT		1.35587	0.2709
CPI does not Granger Cause MSOPC	25	4.61834	0.0493
MSOPC does not Granger Cause CPI		2.10353	0.1477

Source: Author's Computation from E-view

The Granger causality test result showed only one unidirectional causality from CPI to MSOPC.

4.1.7 Post-Estimation Tests Results

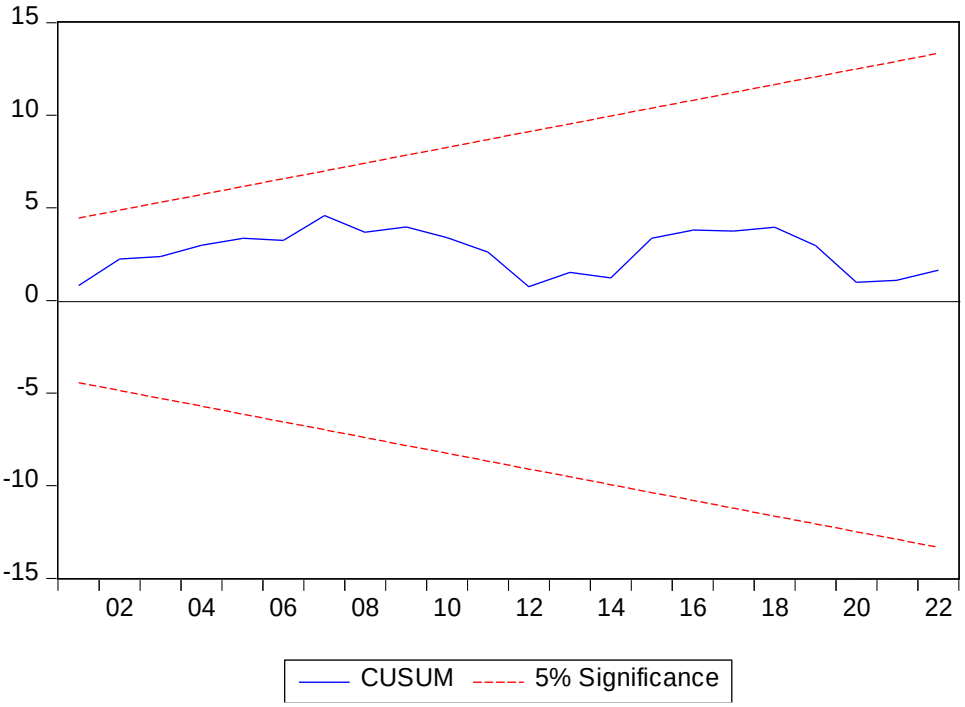
The results and decisions of the post-estimation tests are presented in table 7 and figures 1 and 2.

Table 7: Post-Estimation Tests Results

Tests	Value	Prob.	Decision
Linearity (Ramsey Reset Test)			Accept (Model correctly specified)
t-statistic	0.224060	0.8244	
F-statistic	0.050203	0.8244	
Breusch-Godfrey Serial Correlation LM Test			Accept (No serial correlation0
F-statistic	0.236291	0.7912	
He teroscedasticity (Breusch-Pagan-Godfrey) Test			Accept (Residuals have constant variance)
F-statistic	1.832908	0.1062	
Normality (Jarque-Bera) Test			Accept (Data normally distributed)
F-statistc	2.628946	0.268616	

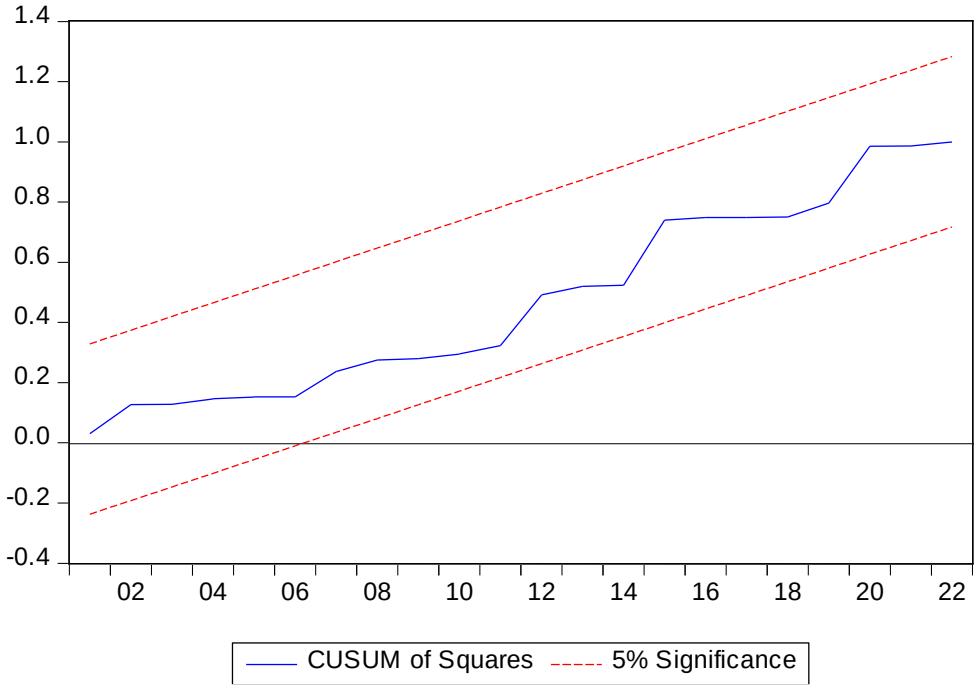
Source: Author's Computation from E-view

Figure 1: Commulative Sum (CUSUM) Stability Test



Source: From E-view output

Figure 2: Commulative sum of square (CUSUMSQ) stability test



Source: From E-view output

Note: For each of the tests in table 7, the null hypotheses were accepted since the probability values are greater than 0.05. For the CUSUM and CUSUMSQ stability test in figures 1 and 2 respectively, since there plots lie within the 5 percent critical bounds, the estimated model is considered stable.

4.2 Discussion of Findings

The Johansen cointegration test indicated long-run relationships among the data series used for the study. The estimated long-run regression result showed that personal income tax and petroleum profit tax have a significant positive impact on manufacturing sector output per capita. Thus, a one percent increase in personal income tax revenue is associated with a N0.00863 billion increase in manufacturing sector output per capita, while a one percent increase in petroleum profit tax revenue is associated with a N0.0028 billion increase in manufacturing sector output per capita. Company income tax has an insignificant positive impact on manufacturing sector output per capita, while value-added tax has a significant negative impact on manufacturing sector output per capita. Therefore, a one percent increase in company income tax revenue will lead to a N0.004 billion naira increase in manufacturing sector output per capita, while a one percent increase in revenue from value-added tax will bring about a N0.0133 billion reduction in manufacturing sector output per capita.

For the corruption perception index, a lower score means a higher level of corruption, while a higher score means a lower level of corruption. The estimated long-run regression result showed that the corruption perception index (CPI) has a significant positive impact on manufacturing sector output per capita. This implies that an increase in the CPI score (i.e., lower level of corruption) will lead to an increase in MSOPC, while a decrease in the CPI score (i.e., higher level of corruption) will lead to a reduction in MSOPC. Therefore, the implication of the positive coefficient of CPI means an increase in the level of corruption will lead to a decline in MSOPC. Thus, a one percent decline in CPI score is associated with a N0.00814 billion reduction in MSOPC.

The estimated short-run regression result showed that company income tax in the current period has a significant positive impact on MSOPC in the current period, while the value of company income tax lagged by two periods has an insignificant positive impact on MSOPC. Personal income tax in the current period and its lagged value in

period one both have a significant negative impact on MSOPC in the current period. Value-added tax in the current period and its lagged value in period one have insignificant negative and insignificant positive effects, respectively, on MSOPC in the current period. Petroleum profit tax in the current period and its value lagged by 3 periods have an insignificant positive impact on MSOPC in the current period. Corruption perception index in the current period has an insignificant positive impact on MSOPC in the current period, while its lagged value in period 2 has a significant positive impact on MSOPC in the current period.

The error correction term (ECM(-1)) has a correct negative coefficient and is also significant at the 0.05 level of significance. This implies that MSOPC is adjusted to variations in the explanatory variables and lags of the dependent variable within a year. The error correction term has a coefficient of -0.853895. This shows a speed of adjustment of about 85 percent. Hence, 85 percent of any disequilibrium in the short-run is adjusted to the long-run (equilibrium) trend within a year.

The coefficient of multiple determination (R-squared) is 0.708137, indicating that the explanatory variables jointly account for about 70 percent of the total variations in the dependent variable. The adjusted R-squared is 0.614325. This implies that if additional explanatory variables are included in the model, the R-squared will reduce to about 61 percent as a result of the loss of the degree of freedom. The F-statistic is 7.548398 with a probability value of 0.000016. This indicates that the overall estimated short-run regression model is significant at the 0.05 level of significance. The Durbin-Watson statistic is 2.125582, signifying that the estimated model is not affected by the problem of serial correlation. The Granger causality test result indicated only one unidirectional causality from corruption perception index to MSOPC.

5. Conclusions and Recommendations

5.1 Conclusions

The following conclusions were drawn from the study.

i) Revenue from personal income tax and petroleum profit tax make a strong positive contribution to the development of the manufacturing sector in Nigeria.

ii) Revenue from company income tax contributes insignificantly to manufacturing sector development in Nigeria.

iii) Revenue from value-added tax strongly reduces the level of development of the manufacturing sector in Nigeria.

iv) Corruption adversely reduces the development of the Nigerian manufacturing sector.

5.2 Recommendations

Based on the findings from the study, the following policy measures are recommended.

i) There is a need to ensure that the various categories of taxes make a significant contribution to the improvement in the performance of the Nigerian manufacturing sector. To achieve this, the government should ensure that the revenue received from taxation is used to provide infrastructural facilities that will enhance the operations and productive capacity of manufacturing firms in the country.

ii) There is a need for probity, accountability, and transparency on the part of tax officials. Government officials responsible for the utilization of revenue from taxation should be honest and transparent in carrying out their functions.

iii) The fiscal authorities of the government should ensure an efficient tax system that will be favorably disposed to taxpayers. The incidence of double or multiple taxation should be equally eliminated.

iv) To reduce the negative effect of value-added tax on manufacturing sector development, the value-added tax rate on manufactured goods should be significantly reduced or totally eliminated. This will bring about a reduction

in the prices of manufactured goods which will, in turn, increase the demand and consumption of locally manufactured goods. The increase in demand will motivate manufacturers to produce more.

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