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REVITALIZING THE INDUSTRIAL SECTOR THROUGH FISCAL POLICY: NIGERIA IN FOCUS

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ABSTRACT
This paper aimed at investigating the influence of government expenditure (a proxy for fiscal policy) on the industrial sector output of Nigeria for the period 1980 – 2018. Government expenditure was disaggregated into capital and recurrent expenditures. Data were sourced from the Central Bank of Nigeria Statistical Bulletin. The data were subjected to Augmented Dickey-Fuller and Philip-Peron unit root test which reported that all the variables were stationary at first difference. The Johansen cointegration test revealed the existence of a long-run relationship among the variables in the model. This therefore posed the need for the use of the Vector Error Correction (VEC) model to estimate both the short-run and long-run estimates. Findings from the VEC revealed that both government capital and recurrent expenditures significantly influences industrial output in the short-run. Also, capital expenditure does not have a significant relationship with industrial sector output in the long-run but recurrent expenditure does. Following the findings, the study recommended that concerted efforts should be made on the part of the government to boost the industrial sector output through development of the nation's infrastructural facilities, in other to encourage domestic investors and win more foreign investors which are highly competitive globally.
Keywords: Fiscal Policy, Industrialization, Industrial Policies, Vector Error Correction

INTRODUCTION
Development is considered synonymous with industrialization (Jaiswal, 2014). Industrialization is believed to be a key driver of growth in any economy. Industrialization therefore, is a process of building up a country's capacity to produce many varieties of products – extraction of raw materials and manufacturing of semi-finished and finished goods (Ekpo, 2014). It is the process of building up a nation's capacity to convert raw materials and other inputs to finished goods and to manufacture goods for other production or for final consumption (Anyanwu, Oyefusi, Oaihenan, and Dimowo, 1997). Thus industrialization could be described as the process of transforming raw materials, with the aid of human resources and capital goods into (i) consumers' goods, (ii) new capital goods which allows more consumers goods (including food) to be produced with the same human resources, and (iii) social

overhead capital, which together with human resources provides new services to both individuals and business (Ekpo, 2005). An industrialized economy is often characterised by a number of changes in economic structure such as a rise in the relative importance of manufacturing industry; a change in the composition of industrial output; and changes in production techniques and sources of supply for individual commodities (Kirkpatrick, Lee, and Nixson 1985).

The industrial sector of the Nigerian economy consists of activities from the crude petroleum and natural gas, solid minerals, and manufacturing (CBN, 2018). These various activity sub-sectors work hand in hand towards ensuring growth in the sector. Evidence from the Central Bank of Nigeria Statistical Bulletin of 2018 reveals that the industrial sector is more driven on the crude petroleum and natural gas followed by the manufacturing sector, with a gross negligence of the solid mineral sector. Details of this is presented in the table below.

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Table 1: Industrial Sector Activities and Output

Activities	1985	1990	1995	2000	2005	2010	2015	2018
Crude Petroleum & Natural Gas	**4918.27**	**6831.77**	**6375.97**	**7281.94**	**9294.05**	**8402.68**	**6629.96**	**6005.96**
Solid Minerals	**44.54**	**29.09**	**17.08**	**21.04**	**29.70**	**51.88**	**102.54**	**96.60**
Coal Mining	26.19	15.53	2.24	2.99	2.06	3.22	7.27	6.82
Metal Ores	2.67	2.14	1.14	1.20	1.34	2.35	4.16	7.70
Quarrying & Other Mining	15.68	11.41	13.70	16.85	26.29	46.30	91.11	82.08
Manufacturing	**1416.79**	**1670.73**	**1592.49**	**1505.66**	**2350.99**	**3578.64**	**6586.62**	**6420.59**
Oil Refining	39.08	42.52	46.07	46.98	166.93	255.16	200.88	143.00
Cement	249.27	221.11	232.32	87.13	129.37	221.09	596.17	576.63
Food, Beverage and Tobacco	836.04	1042.51	973.60	1016.17	1522.29	2298.52	2937.06	2900.15
Textile, Apparel and Footwear	128.23	159.90	149.33	155.86	233.49	352.54	1423.02	1443.03
Wood and Wood Products	44.88	55.96	52.26	54.55	81.72	123.38	205.21	201.35
Pulp, Paper and Paper Products	8.86	11.05	10.32	10.77	16.13	24.36	53.67	53.26
Chemical and Pharmaceutical Products	9.15	11.41	10.66	11.13	16.67	25.17	150.99	154.93
Non-Metallic Products	21.66	27.01	25.22	26.33	39.44	59.55	227.23	237.96
Plastic and Rubber products	12.32	15.36	14.34	14.97	22.42	33.86	212.63	225.87
Electrical and Electronics	0.91	1.14	1.06	1.11	1.66	2.51	5.13	4.76
Basic metal, Iron and Steel	16.18	20.17	18.84	19.66	29.45	44.47	168.19	168.42
Motor vehicles & assembly	7.96	9.93	9.27	9.68	14.50	21.89	52.68	28.60
Other Manufacturing	42.24	52.68	49.19	51.35	76.92	116.14	353.74	282.64
Industrial Output	**6379.60**	**8531.59**	**7985.54**	**8808.65**	**11674.74**	**12033.20**	**13319.13**	**12523.15**

Source: Central Bank of Nigeria Statistical Bulletin, 2018

From Table 1, it can be observed that the output of the industrial sector is dominated by the activity in the crude petroleum and natural gas accounting for 77.09% of the total industrial output as at 1985. This rate however declined to 49.78% and 47.96% in 2015 and 2018 respectively. This decline can be said to be attributed to the oil price slash in the stated period. Following the dominance of this sector by petroleum and natural gas is the manufacturing sub-sector with a percentage contribution of 22.21% and 29.74% for 1985 and 2010 respectively. The sub-sector contributed to 49.45% and 51.27% to total industrial output in 2015 and 2018 respectively. This can also be attributed to the sudden improvement in the Food, Beverage and Tobacco production as well as in the Textile, Apparel and Footwear production. Fiscal policy deals with the taxation and expenditure decisions of the government which include, tax policy, expenditure policy, investment or disinvestment strategies and debt or surplus management (Jaiswal, 2014). Government expenditure is believed to be an appropriate measure of fiscal policy (Olaloye and Ikhide, 1995). Government spending to improve the economy has been on the increase over the years. The breakdown of such expenditure patterns into capital and recurrent expenditures are presented in the Table 2.

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Table 2: Breakdown of Government Expenditure

Government Capital Expenditure (in ₦ billions)									
Year	Administration	% of Total	Economic Services	% of total	Social and Community Services	% of Total	Transfers	% of Total	Total
1985	0.46	8.41	0.89	16.34	1.15	21.12	2.96	54.14	5.46
1990	2.92	12.14	3.49	14.49	2.10	8.72	15.55	64.65	24.05
1995	13.34	11.01	43.15	35.62	9.22	7.61	55.44	45.76	121.14
2000	53.28	22.25	111.51	46.57	27.97	11.68	46.70	19.50	239.45
2005	171.57	33.03	265.03	51.02	71.36	13.74	11.50	2.21	519.47
2010	260.20	29.44	412.20	46.64	151.77	17.17	59.70	6.75	883.87
2015	226.81	27.71	348.75	42.62	82.98	10.14	159.82	19.53	818.35
2018	446.25	26.53	753.49	44.79	203.42	12.09	278.94	16.58	1682.10

Government Recurrent Expenditure (in ₦ billions)									
Year	Administration	% of Total	Economic Services	% of total	Social and Community Services	% of Total	Transfers	% of Total	Total
1985	1.43	18.88	0.46	6.08	0.27	3.62	5.41	71.42	7.58
1990	6.54	18.06	3.40	9.38	1.61	4.46	24.67	68.11	36.22
1995	28.76	22.53	13.82	10.83	5.92	4.64	79.13	62.00	127.63
2000	144.53	31.31	84.79	18.37	28.59	6.19	203.69	44.13	461.60
2005	434.67	32.90	151.65	11.48	64.31	4.87	670.60	50.76	1321.23
2010	1117.44	35.94	550.90	17.72	562.75	18.10	878.34	28.25	3109.44
2015	1228.99	32.07	807.59	21.08	275.36	7.19	1520.01	39.67	3831.95
2018	1584.06	27.91	1083.73	19.10	372.55	6.56	2634.86	46.43	5675.20

Source: Central Bank of Nigeria Statistical Bulletin, 2018

From table 2, government capital and recurrent expenditures on transfers have been gaining a great momentum over the years. It took as much as 54.14% in 1985 for capital expenditure and 71.42% for recurrent expenditure in the same period. Less attention has been shown to the social and community service aspect of the expenditure of the government with a minute 12.08% and 6.56% in 2018 for capital and recurrent expenditures respectively.

Several industrial policies have been adopted over the years to forestall the lost glory of this key sector. Such attempts include Import Substitution Industrialization Strategy (ISIS) which was adopted as far back as 1960 up till 1985, Export Promotion Strategy, and Foreign Private Investment Led Industrialization Strategy. Despite these efforts, the industrial sector contribution to GDP has maintained a downward trend. Myriad of factors militating against Nigeria's industrial development include poor policy conceptualization and implementation; lack of technological capability, which is a sine qua non for industrial development; high cost of production resulting in non-competitiveness of Nigeria's manufactured goods in both local and international markets; concentration on light consumer goods instead of capital goods which sustain industrialization; inadequate infrastructure such as transportation, water supply, electricity supply and telecommunications, which are crucial enablers of industrialization; and poorly developed human capital (Ekpo, 2014).

Government expenditure programme have been geared towards industrial sector development as shown by the increased expenditure behaviour over the years. Theory states that there exists a direct relationship between government expenditure and output. Nigeria has been witnessing greater attention on the part of the government when it comes to the spending behaviour. Government expenditure have been on the increase right from 2000 to 2018 but in the later years (1980 to 1999), the trend was a steady and slow one. This should therefore be accompanied by a proportionate increase in the industrial sector output. However, the country has been witnessing ups and downs in the output of the industrial sector as well as the sector's contribution to GDP. For instance, the contribution of the industrial sector to GDP stood at 41.06% in 1980 but declined to 37.19% in 2000 despite the increase in government expenditure from 14.97 billion naira in 1980 to 701.05 billion naira in 2000 (CBN, 2018).

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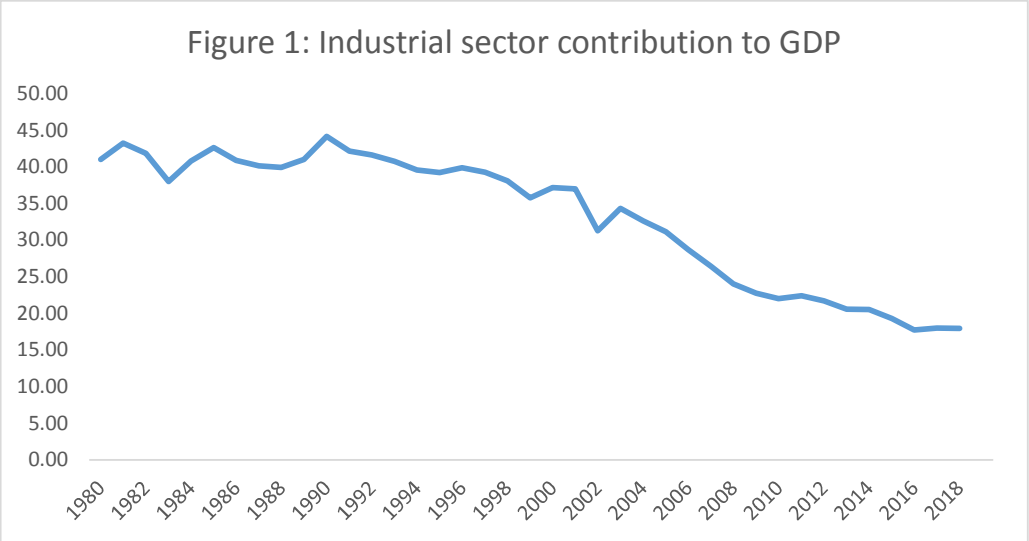

This drastic decline in industrial sector contribution to GDP is still on-going since even as at 2010, the rate stood at 22.03% while it declined further to 17.94% in 2018. This therefore arouse a great worry on the minds of policy makers as to whether increased government spending can be used to revitalize or leapfrog the industrial sector from the position of declining output to the point of mass production. Certain key questions therefore emanate from the observed trend. One of such is whether fiscal policy influences industrial output in the short-run. Also, is there any long-run relationship between fiscal policy and industrial sector output in Nigeria? It is this vein that this study seeks to investigate whether fiscal policy can be used to revitalize the industrial sector of the Nigerian economy taking note of both the short-run and long-run situations. In achieving this, this paper is structured into five sections. Following this section is section 2 which is the literature review. Section 3 captures the methodology of the research while section 4 showcases the empirical findings. Section 5, being the last section, presents the conclusion and the recommendations of the study based on the major findings.

LITERATURE REVIEW

Theoretical Literature

Several schools of thought have been on the fore when it comes to the issue of fiscal policy and how it can affect growth in the economy. The three schools of thought are Classical school of thought, Keynesian school of thought and Neo-classical school of thought. Classical school of thought believes that debt issued by the public has no effect on the private sector savings. This

means that fiscal deficit financed by debt crowds-out private sector investment and as well lowering the level of economic growth and development. Keynesian school of thought opined that there is positive relationship between deficit financing and investment. This means that fiscal policy is a tool used to overcome fluctuation in the economy. Neoclassical school of thought challenged the position of Keynesian school of thought on the ground that the manner in which fiscal deficits are financed is capable of influencing the level of consumption, investment and economic growth.

This study adopts Wagner's theory of fiscal policy which takes its stands form the Keynesian school. Adolph Wagner (1835-1917), a German economist, propounded a theory on public expenditure based on observation of his country and other countries. Wagner (1890) argued that "for any country, public expenditure rises constantly as income growth expands." The prediction therefore is that the development of an industrial economy will be accompanied by an increased share of public expenditure in the gross national product. Based on the theory, public expenditure basically must influence the economy positively, which in turn will result in increased spending with concomitant economic progress (Ekong, Okon, and Effiong, 2019). Wagner (1890) argued that "as progressive nations industrialize, the share of the public sector in the national economy grows continually." Government involvement and increase in spending becomes necessary because of the increasing social, administrative, protective and welfare functions in the state (Singh, 2008). This will therefore create the enabling environment for investment and growth.

Empirical Literature

Ajayi (1974) emphasized that in developing economy in which Nigeria is a typical example, the emphasis is always on fiscal policy rather than monetary policy. In his study, he estimated the variables of monetary and fiscal policies using ordinary least square (OLS) technique and found out that monetary influences are much larger and more predictable than fiscal influences. This result was confirmed with the use of beta coefficients that changes in monetary action were greater than that of fiscal action. In essence, greater reliance should be placed on monetary actions. Elliot (1975) examined the relative importance of money supply changes compared to government expenditure changes in explaining fluctuations in nominal GNP. He estimated St. Louis equation with the use of OLS technique and the result of his evaluation clearly

supported the conclusion that fluctuations in nominal GNP more importantly attach to monetary movements than to movements in federal government expenditure.

In the same vein, Batten and Hafer (1983) also discussed the relative effectiveness of the two stabilization policies in some developed countries. In their study, they found out monetary action rather than fiscal action had a greater influence on the nominal GNP. The above study however confirms the work of Dewald and Marchon (1978) and Elliot (1975). Andersen and Jordan (1986) tested empirically the relationships between the measures of fiscal and monetary actions and total spending for United States. These relationships were developed by regressing quarter to quarter changes in Gross National Product on quarter to quarter changes in the money stock and the various measures of fiscal actions namely; high employment budget surplus, high employment expenditure and high employment receipt. The analysis of their results was that the influence of fiscal action on economic activity occurred faster than that of monetary action.

Also, Chowdhury (1986), in his study of monetary and fiscal impacts on economic activity in Bangladesh was also of the opinion that fiscal rather than monetary action had greater influence on economic activities. He also made use of the ordinary least square (OLS) technique in his empirical investigation. He adopted St. Louis equation in estimating the monetary and fiscal variables. In analysing his results, he confirmed the result of some authors and concluded that fiscal actions exert greater impact on economic activity in Bangladesh than monetary actions. It follows from this study that fiscal policy impacts on nominal income are more predictable than the monetary impact (See Bakare-Aremu and Osobase, 2015).

Olaloye and Ikhide (1995) examined economic sustainability and the role of fiscal and monetary policies in a depressed economy by taking Nigeria as a case study. They estimated a slightly modified form of the basic St. Louis equation using monthly data for the period 1986-1991. The analysis of their results showed that fiscal policy exerts more influence on the economy than monetary policy. The result, therefore, suggests that fiscal policies have been more effective in Nigeria at least in the period of depression. They are, however, of the opinion that government expenditure will be an appropriate measure of fiscal policy.

Ajisafe and Folorunso (2002) studied the relative effectiveness of fiscal and monetary policies in macroeconomic management in Nigeria using annual series data for the period 1970-1998. The result of their analysis showed that monetary policy rather than fiscal policy exerts a greater impact on economic activities in Nigeria. The effectiveness of both policies was determined through cointegration and error correction modelling techniques. They stressed further that the emphasis on fiscal action of the government has led to greater distortion in the Nigerian economy. They were, however, of the view that both fiscal and monetary policies should be complementary. Their conclusion confirms with the studies of Elliot (1975), and Batten and Hafer (1983).

Omitogun and Ayinla (2007) attempted to establish whether there is a link between fiscal policy and economic growth in Nigeria using the Solow growth model estimated with the use of ordinary least square (OLS) method. It was found that fiscal policy has not been effective in the area of promoting sustainable economic growth in Nigeria. This finding did not believe with Keynesian theory which is anchored on the need for an active policy to sustain economic growth. Dickson (2007) critically examine the recent trends and patterns in Nigeria's industrial development using descriptive study. The study indicates that the level of manufacturing industry in Nigeria is concentrated in the southern part of the country and that the spatial pattern could change if industrialists adopt the strategy of industrial linkage. This finding did not support any school of thought as it suggests that policy on privatisation of industry in Nigeria should be enhanced.

Ajayi (2011) in a study of the collapse of Nigeria's manufacturing sector on economic growth. He used cross-sectional research design and found out that the main cause of collapse in the Nigerian manufacturing sector is low implementation of Nigerian budget especially in area of infrastructure. This means that low implementation of fiscal policy affects the level of growth in Nigerian manufacturing sector. In a study by Rasheed (2010), he investigated the productivity in the Nigerian manufacturing subsector using co-integration and an error correction model. The study indicates the presence of a long-run equilibrium relationship index for manufacturing production, determinants of productivity, economic growth, interest rate spread, bank credit to the manufacturing subsector, inflation rates, foreign direct investment, exchange rate and quantity of graduate employment.

Rina, Tony and Lukytawati (2010) examined the impact of fiscal and monetary policy on industry and growth of economy in Indonesia using the computable general equilibrium (CGE) model. It was found that fiscal and monetary policy have a positive impact on Indonesian macroeconomic performance in terms of change in GDP, investment, consumption and capital rate of return. Ogbole, Sonny and Isaac (2011) focussed on the comparative analysis of the impact of fiscal policy on economic activities in Nigeria during regulation and deregulation, using the econometric methods of co-integration and error correction model. The study indicates that there is a difference in the effectiveness of fiscal policy in stimulating economic growth during and after regulation period. They recommend that government fiscal policy should refocus and redirect government expenditure towards production of goods and services so as to enhance GDP growth.

Sangosanya (2011) used panel regression analysis model and Gibrat's law of proportionate effect in investigating firm's growth dynamics in Nigerian manufacturing industry. The study observed that the manufacturing firms finance mix, utilization of assets to generate more sales, abundance of funds reserve and government policies are significant determinants of manufacturing industry growth in Nigeria. Peter and Simeon (2011) used vector auto regression (VAR) and error correction mechanism techniques to ascertain impact of fiscal policy variables on Nigerian economic growth between 1970 and 2009. The study revealed that there is a long-run relationship between fiscal policy variables and economic growth in Nigeria.

Charles (2012) investigated the performance of monetary policy on manufacturing sector in Nigeria, using econometrics test procedures. The result indicates that money supply positively affect manufacturing index performance while company lending rate, income tax rate, inflation rate and exchange rate negatively affect the performance of manufacturing sector. This means that monetary policy is vital for the growth of the manufacturing sector in Nigeria which in turn would lead to economic growth. Eze and Ogiji (2013) attempted to examine the impact of fiscal policy on the manufacturing sector output in Nigeria using an ex-post facto design. The results of the study indicate that government expenditure significantly affect 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. Their key recommendation was that

the expansionary fiscal policies should be encouraged as they play vital role for the growth of the manufacturing sector output in Nigeria.

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 expected impact on 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.

Summary of Literature Reviewed

Reviewing the various literatures above, while the studies of Ajayi (1974), Elliot (1975), Batten and Hafer (1983), Ajayi (1974), Ajisafe and Folorunso (2002), Ajayi (2008), and Charlse (2012) supported monetary policy as being more potent than the fiscal policy in regulating the macroeconomic activities, others such as the studies of Andersen and Jordan (1986), Chowdhury (1986), Olaloye and Ikhide (1995), Oktaviani et al. (2010), had contrary results. Even the work of Rina, Tony, and Lukytawati (2010) suggested a complement of the two. Can we then conclude that, probably, monetary policy is more effective than fiscal policy or vice versa? It has become obvious that empirical studies regarding the relative effectiveness of the stabilization tools in Nigeria are on the increase. As noted above, very scanty works had been done to reveal how effective fiscal policy could be in influencing the industrial output in general. The purpose of this study is, therefore, to fill this vacuum by examining empirically the influence of fiscal policy on industrial output in Nigeria taking due advantage of longer time series.

Stylized Facts on Industrial Output and Government Expenditure

Figure 2: Industrial output (INDQ) and total government expenditure (TGEX)

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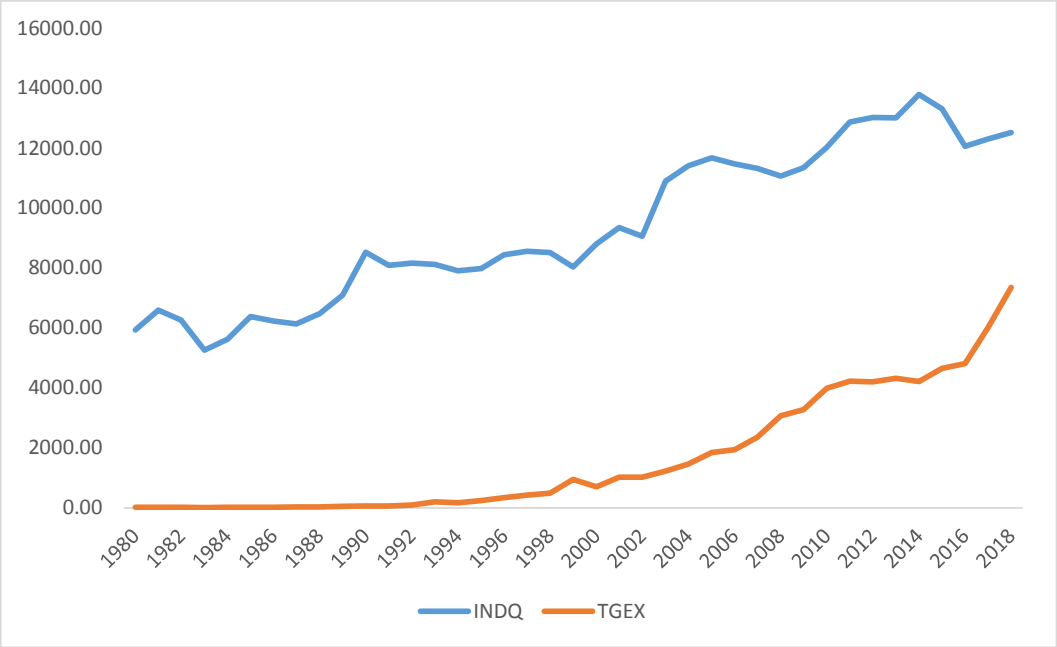

Source: Author computation using Excel

As shown in the Figure 2, total government expenditure in the early years under review was small and insignificant (1980 to 1994) when compared to the latter years (1995 to 2018). This was probably due to the organic nature of "State", that is, the bigger the state becomes the higher would be the government spending and as such infrastructural facilities should perhaps grow along, this is highly important for industrial growth. Also, it is believed that government expenditure increases since over time government shifts its focus from that of only maintaining peace and order to that of promoting welfare services. Nevertheless, industrial output has been on the increase along with public spending but in a disproportionate manner, the question of whether this spending has affected the growth of industrial output would be tested empirically, later in this section by disaggregating such expenditures into capital and recurrent expenditures. It follows from the above trend that an increase in government expenditure is more likely to result in an increase in industrial sector output and vice versa.

METHODOLOGY

Basic Research Design

This study employed the econometric approach to ascertain the influence of fiscal policy on the industrial sector output hence, it is empirical by nature.

Data used in the data were obtained from secondary sources and statistical software was used in the analysis.

Sources of Data

Data for this study were secondary data obtained majorly from the 2018 Central Bank of Nigeria statistical bulletin.

Analytical Technique

The data for this study were diagnosed for the presence of unit root using the Augmented Dickey-Fuller (ADF) and the Philip-Peron (PP) unit root test technique. The cointegration test was done through the use of the Johansen Cointegration test technique, while the estimation follows the OLS estimation technique of multiple regression and the Vector Error Correction Model (VECM). The analysis was carried out using Eviews 9.0 software package.

Model Specification

The functional relationship between fiscal policy variable (government expenditures) and the industrial sector output is expressed as

$INDQ = f(CEXP, REXP, INT, CPS, EXC)$ ---------- (1)

Which by transformation becomes,

$INDQ = \varphi_0 + \varphi_1 CEXP + \varphi_2 REXP + \varphi_3 INT + \varphi_4 CPS + \varphi_5 EXC + \mu$ -(2)

Where:

INDQ = industrial sector output,

CEXP = government capital expenditure,

REXP = government recurrent expenditure,

INT = interest rate,

CPS = credit to private sector,

EXC = exchange rate,

μ = random error term which is assumed to be purely white noise,

φ_0 to φ_1 are the parameters to be estimated.

It is expected that φ_0, φ_1, φ_2, and $\varphi_4 > 0$ while φ_3 and $\varphi_5 < 0$.

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EMPIRICAL FINDINGS

Descriptive Statistics

Table 3: Descriptive statistics of the Series

	INDQ	CEXP	REXP	INT	EXC	CPS
Mean	9379.869	415.550	1249.014	17.386	86.408	4701.767
Median	8561.917	269.652	449.662	17.500	92.693	431.168
Maximum	13791.25	1682.099	5675.201	29.800	306.080	22521.93
Minimum	5264.881	4.100	4.751	7.750	0.610	8.570
Std. Dev.	2567.301	441.093	1612.230	4.720	87.183	7358.722
Skewness	0.115	0.933	1.158	0.206	0.829	1.372
Kurtosis	1.672	3.039	3.131	3.490	2.996	3.350
Jarque-Bera Probability	2.953 (0.2285)	5.664 (0.0589)	8.750 (0.0126)	0.666 (0.7169)	4.471 (0.1070)	12.438 (0.0020)
Sum	365814.9	16206.47	48711.53	678.0395	3369.862	183368.9
Sum Sq. Dev.	2.50E+08	7393392	98772876	846.5918	288835.3	2.06E+09
Observations	39	39	39	39	39	39

Source: Author computation using Eviews 9.0

From table 3, it is observed that within the period, INDQ, CEXP, and REXP averaged 9379.869, 415.550, and 1249.014 respectively while INT, EXC, and CPS average 17.386, 86.408, and 4701.767. The maximum value of INDQ stood at 13791.25 while its minimum value was 5264.881.

Correlation Matrix

The correlations between variables in the model is presented below.

Table 4: Correlations coefficients

	INDQ	CEXP	CPS	REXP	INT	EXC
INDQ	1.000	-0.171	0.068	-0.203	0.127	0.183
CEXP	-0.171	1.000	-0.094	0.411	-0.024	0.252
CPS	0.068	-0.094	1.000	0.127	-0.102	-0.290
REXP	-0.203	0.411	0.127	1.000	0.104	0.093
INT	0.127	-0.024	-0.102	0.104	1.000	0.444
EXC	0.183	0.252	-0.290	0.093	0.444	1.000

Source: Author Computation using Eviews 9.0

As observed from table 4, no correlation between the explanatory variables is greater than 0.30 hence, there is no perception of multicollinearity to occur. Each variable is perfectly correlated with itself thereby yielding a correlation coefficient of 1.000.

Diagnostic Test

The Augmented Dickey-Fuller (ADF) and the Philip-Peron (PP) diagnostic test for unit root test is presented below.

Table 5: ADF and PP Unit Root Test Result

Augmented Dickey-Fuller (t-Statistic)			
Variables	Level I(0)	First Difference I(1)	Order of Integration
INDQ	-2.6522	-5.5920***	I(1)
CEXP	-1.6242	-5.9022***	I(1)
REXP	1.1235	-5.1764***	I(1)
INT	-3.4532*	-6.2817***	I(1)
CPS	-0.3621	1.0630	Non-stationary
EXC	-1.8571	-4.6155***	I(1)
Philip – Peron (Adj. t-Stat)			
INDQ	-2.8251	-5.5757***	I(1)
CEXP	-1.2939	-6.4240***	I(1)
REXP	1.4909	-5.1577***	I(1)
INT	-3.0178	-10.2255***	I(1)
CPS	0.2850	-4.5816***	I(1)
EXC	-1.0664	-4.4461***	I(1)

Source: Author computation using Eviews 9.0

*Note: * and *** denotes significance at the 10% and 1% level. The accepted level of significance is 1%. All estimation follows the constant, linear trend assumption, and the maximum lag length is selected based on the SIC.*

Table 5 depicts the unit root test result. The ADF technique reveals that all the variables are stationary at first difference (I(1)), except CPS which is reported to be non-stationary. The Philip-Peron test technique still supports the fact that the variables are all stationary at first difference. This therefore warrants the test for cointegration among the variables.

Cointegration Test

Since all the variables are reported to be stationary at first difference, I(1), the need for a test for the existence of a long-run relationship becomes pertinent. The null hypothesis is that there is no long-run relationship. The Johansen Cointegration is therefore employed and the result is presented thus.

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Table 6: Johansen Cointegration Test Result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized no. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Probability **
None *	0.6862	133.1030	95.7537	0.0000
At most 1 *	0.6195	90.2173	69.8189	0.0005
At most 2 *	0.5815	54.4668	47.8561	0.0106
At most 3	0.3221	22.2350	29.7971	0.2857
At most 4	0.1891	7.8511	15.49471	0.4814
At most 5	0.0025	0.0941	3.8415	0.7591
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized no. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Probability
None *	0.6862	42.8857	40.0776	0.0235
At most 1 *	0.6195	35.7505	33.8769	0.0295
At most 2 *	0.5815	32.2318	27.5843	0.0117
At most 3	0.3221	14.3838	21.1316	0.3344
At most 4	0.1891	7.7571	14.2646	0.4039
At most 5	0.0025	0.0941	3.8415	0.7591

Source: Author computation using Eviews 9.0

** denotes rejection of the hypothesis at the 0.05 level of significance*

From table 6, both the Trace statistics and the Max-Eigen statistics showed three cointegrating equations (CE(s)). Hence, there exist a long-run relationship. The existence of the cointegrating equations is a strong evidence to test for the existence of a long-run relationship among the variables in the model. This therefore necessitates the use of the Vector Error Correction (VEC) model to estimate both the long-run and short-run relationship.

The Short-Run Vector Error Correction (VEC) Estimates

Table 7: Short-Run VEC estimates

Variables	Coefficient	Standard Error	t-statistic
C	236.8034	124.450	1.9028**
D(INDQ(-1))	0.3388	0.1761	1.9237**
D(INDQ(-2))	0.1403	0.1519	0.9232
D(CEXP(-1))	-0.6200	0.6093	-1.0176
D(CEXP(-2))	2.0100	0.7115	2.8250**
D(REXP(-1))	-1.9281	0.6236	-3.0920***
D(REXP(-2))	-0.9848	0.6173	-1.5953*
D(INT(-1))	-43.5238	35.8911	-1.2127
D(INT(-2))	-20.7263	30.9581	-0.6695

D(CPS(-1))	0.0310	0.1122	0.2761
D(CPS(-2))	0.3816	0.1228	3.1074***
D(EXC(-1))	6.0269	6.3891	0.9433
D(EXC(-2))	-9.0708	6.9735	-1.3008*
ECM(-1)	-0.7373	0.1778	-4.1473***
R^2 = 0.6570	Adjusted R^2 = 0.4543	F-Statistic = 3.2412**	

Source: Author computation using Eviews 9.0
Note: *, **, and *** denotes significance at the 10%, 5% and 1% respectively

It is observed that the a priori expectation for CEXP was not met in the first period but held on the second period while the expectation was not in any way being met for REXP in both the first and second periods. The a priori expection for INT, CPS, and EXC was met in both the first and second period except for EXC which was not met in the first period. The constant term showed that holding every variable in the model constant, the value of INDQ will be 236.8034. Result from table 7 showed that the first-period lag of the change in CEXP, REXP, and INT negatively impact on the INDQ. Also, the second-period lag of the change in REXP, INT, and EXC negatively impact on INDQ. Most specifically, the negative impact of the first-period lag of the changes in REXP is statistically significant while others are not. This means that for a unit percentage increase in REXP, INDQ decreases on the average by 1.9281%. The negative impact of the second-period lag of REXP and EXC is also statistically significant while others are not. This implies that for a unit percentage increase in the second-period lag of the REXP, INDQ on the average will decrease by 0.9848% in the short-run while for a unit percentage increase in EXC in the second-period, INDQ decreased by 9.0708% on the average.

The first-period lag of the change in INDQ, CPS, and EXC positively influence INDQ but only the first-period lag of INDQ had a significant influence. This implies that INDQ increases itself by 0.3388% in the first-period. Also, the second-period lag of INDQ, CEXP, CPS had a positive influence on INDQ however, the influence was statistically significant in terms of CEXP and CPS. This implies that for a unit percentage increase in the second-period lag of CEXP and CPS, INDQ increased by 2.01% and 0.3816% respectively. The value of the ECM (-0.7373) is rightly signed and statistically significant at the 5% level. This implies that the previous period disequilibrium is brought back to equilibrium with an adjustment speed of

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73.73%. The R^2 of 0.6570 showed that 65.70% of the total variations in the dependent variable is accounted for by the explanatory variables. This is a clear indication that other key variables which are excluded in the model really influences industrial sector output. Such, which were identified as external factors by Bakare-Aremu and Osobase (2015), include economic openness, globalization policy, etc. The F-statistic (3.2412) which is significant at the 5% level implies that the overall model is significant.

Table 8: Long-Run VEC estimates

Variables	Coefficient	Standard Error	t-statistic
INDQ	1.0000		
CEXP	0.7265	0.6026	1.2057
REXP	-3.6295	0.5566	-6.5205***
INT	-125.8147	13.3287	-9.4394***
CPS	0.4858	0.0830	5.8552***
EXC	-7.2865	3.1085	-2.3441**
C	-4722.468		

Source: Author computation using Eviews 9.0
Note: *, **, and *** denotes significance at the 10%, 5% and 1% respectively

As revealed in table 6, in the long run REXP, INT, CPS, and EXC will have a significant effect on the INDQ while CEXP had an insignificant influence. The implication of this is that in the long-run, if REXP increased by 1%, INDQ will decrease by 3.6295%. Also, if INT increase by 1%, INDQ will decrease by 125.8147% while for a unit percentage increase in CPS, INDQ will increase by 0.4858%. INDQ decrease by 7.2865% if there is a unit percentage increase in EXC in the long-run.

DISCUSSION OF MAJOR FINDINGS

It is surprising to observe that government capital expenditure exert positive but insignificant influence on industrial output. This can be attributed to insufficient spending on infrastructural facilities that can spring up and encourage industrial outlets in their operations. It can be recalled that the government paid little attention to the economic services in its expenditure programme but lend much weight to expenditures on administration and transfers. This can therefore in no way trigger the industrial sector output. Recurrent expenditure is seen to be negatively affecting industrial output. This negative impact can be attributable to the fact that recurrent

expenditures do not add to the existing stock of capital rather, it serves majorly in the payment of salaries and wages and maintenance of existing infrastructures. Credit to private sector is also seen to be crucial in influencing industrial sector output. The availability of credit will encourage investment in the industrial sector and this will tantamount to increased industrial output. Interest rate exert a significant negative effect on industrial sector output. A higher rate of interest is likely to discourage investors to borrow and invest in the industrial sector hence, a decline in the sector's output.

Answering the Research Questions

On the question of whether fiscal policy influences industrial output in the short-run, this study revealed that both government capital and recurrent expenditures, being the proxies for fiscal policy, significantly influences industrial output in the short-run. Also, the question of whether there exists a long-run relationship between fiscal policy and industrial output can be answered from the long-run VEC estimates. Based on the estimates, capital expenditure does not have a significant relationship with industrial sector output in the long-run but recurrent expenditure does.

CONCLUSION AND RECOMMENDATIONS

This paper seeks to investigate the influence of fiscal policy in revitalizing the industrial sector of the Nigeria economy using time series data for the period 1980 to 2018. The series were tested for the presence of unit root and the result, based on the Philip-Peron technique, revealed that all the variables were stationary at first difference. the cointegration result revealed the presence of cointegrating equations which warrants the use of Vector Error Correction (VEC) to showcase both the short-run and long-run influence of fiscal policy on industrial output. Findings from the study depict that both the capital and recurrent expenditures have a significant effect on industrial output in the short-run. However, capital expenditure posed an insignificant effect on industrial output in the long-run while recurrent expenditure was observed to be significantly influencing the industrial output. It is in this light that this study concluded that fiscal policy measures are potent in influencing the industrial sector output.

The study therefore recommended that concerted efforts should be made on the part of the government to boost the industrial sector output through development of the nation's infrastructural facilities, in other to encourage

domestic investors and win more foreign investors which are highly competitive globally. There is need on the part of the monetary authority to regulate the rate of interest to the level where investors can borrow at a lower rate so that they can recoup their capital and also make a reasonable profit in the course of their operations. Efforts should be geared towards revamping the solid mineral sub-sector as there have been acute underutilization of the sub-sector. There is need to redirect fiscal policy measures towards making Nigeria a producer nation through manufacturing sector which in turn would lead to economic growth and development. Government economic policies should be on diversification of the economy to enhance the performance of manufacturing sector, so as to create more employment opportunities, because it may be a more effective way of reducing the level of unemployment and increasing the growth of the economy. To cap it all, both the fiscal and monetary policies of stabilization to be applied hand-in hand with full coordination so as to ensure effective influence on the industrial sector output.

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