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Macroeconomic Policies, Industrialization and Economic Growth in Nigeria

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Abstract

This paper employed the simultaneous equation model using the three-stage least squares technique to analyse the impact of money supply, government expenditure and exchange rate on industrial output; and the effect of industrial output on economic growth in Nigeria. The study used annual data covering 1981 to 2017. It was found that industrial output affects economic growth positively in Nigeria, just as exchange rate has a positive significant impact on industrial output. The study recommends that fiscal policies should be formulated with a clear-cut view to addressing the industrial needs of the country.

Keywords: *economic growth, government expenditure, industrialization, macroeconomic policies, money supply*

1. Introduction

In many modern economies, industrialization is the vehicle for increased productivity, employment generation and economic growth. This is why Kayode (1989) described industry, with emphasis on the manufacturing sub-sector, as the heart of an economy. Macroeconomic policies can be important and powerful instruments for stimulating industrialization and economic growth of an economy. The industrial sector can effectively play its role in an economy when key challenges of the sector are addressed through appropriate macroeconomic policies. According to the UNCTAD (2005), the industrial sector needs to focus on several key business challenges such as reducing costs, improving employee productivity, building competitive advantage through producing quality products and services, and other entrepreneurial interventions. To achieve the growth potential of the industrial sector, a government must play a role of providing the necessary infrastructure such as electricity and transport facilities to the sector: this is only achievable through right macroeconomic policies.

One of the greatest challenges of industrialization in less developed countries is poor macroeconomic policies. Different policies have been put in place since independence to drive industrialization in Nigeria. This is manifested in the first, second and third national development plans, as well as in the introduction of the Indigenization of Enterprises Operating in Nigeria Act of 1972. This policy was subsequently amended, repealed, and replaced by the Nigerian Enterprises Promotion Act of 1977

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(Ighodaro, 2017). In March 2017, the Federal Government of Nigeria released its Economic Recovery and Growth Plan (ERGP), a medium-term plan for 2017 to 2020. The objectives of the plan are to restore economic growth, build a globally competitive economy; and invest in Nigerians by driving social inclusion, job creation, youth empowerment and improved human capital. To achieve the objectives of the plan, the Nigerian government has the priority to stabilizing the macroeconomic environment, achieving agriculture and food security and, among others, driving industrialization by focusing on small and medium enterprises (SMEs) (ACIOE Associates, 2017).

After more than 57 years of independence, Nigeria is yet to be an industrialized nation. The country remains an exporter of raw materials and commodities. Over 90 percent of export earnings and 70 percent of government revenues are derived from crude oil export (Umbi, 2018). The contribution of the industrial sector to gross domestic product in Nigeria still leaves much to be desired. The sector only accounts for about 6 percent of the country's economic activity (Chete et al., 2014). Lawal (2016), Iya et al. (2016), Akekere et al. (2017), and Ighodaro (2017), among others, have done studies relating to industrialization as it relates to economic growth and some macroeconomic variables. They either used the ordinary least squares, vector autoregressive or vector error correction model as well as single equation for estimations. This study differs from these because it employed the simultaneous equation model using the three-stage least squares estimation technique. The objectives are to investigate the inter-linkage between money supply, government expenditure, exchange rate and industrial output; as well as to ascertain the impact of industrial output on economic growth in Nigeria.

Following section one, section two presents a literature review, while section three presents model specification, sources of data and method of data analysis. Section four provides the analysis of the preliminary data tests, while section five interprets the results and discusses the findings. Section six concludes and provides some recommendations.

2. Literature Review

A large and growing body of literature has investigated the effects of macroeconomic policy variables on industrialization, as well as the impact of an industrial sector on economic growth. Owolabi and Adegbite (2012) investigated the effects of foreign exchange regimes on industrial growth in Nigeria for the period 1985 to 2005, employing the ordinary least squares technique. They found that exchange rate has a significant effect on industrial growth in Nigeria; and concluded that the effect of employing foreign exchange, per capita income, world price index and net export as inducement for greater performance for stable economic growth can provide stable prices for manufactured goods.

In another study, Ubi et al. (2012) empirically assessed the impact of monetary policy on industrialization in Nigeria, employing the vector error correction technique.

They found that interest rate, exchange rate, money supply, total reserves and balance of trade have statistically significant impact on industrialization. They concluded that monetary policy should be clearly defined in response to the dynamics of domestic and global economic developments. Eze and Ogiji (2013) examined the impact of fiscal policy on the manufacturing sector output in Nigeria using the error correction methodology. The results indicated that government expenditure significantly affects the output of the manufacturing sector, and that a long-run relationship exists between fiscal policy and manufacturing sector output in Nigeria. The finding revealed that if the government fails to increase its public expenditure on the manufacturing sector, and implement such an expenditure, the output of the manufacturing sector will not generate a corresponding increase in the growth of the Nigerian economy.

Iweriebor et al. (2015) examined the dynamic effect of public spending on the industrial sector in Nigeria for the period 1980 to 2013. They adopted the error correction mechanism, and found that public spending has no significant effect on industrial production in the short-run. Moreover, they found that government spending has a relatively weak effect on industrial output even in the long-run, suggesting a disconnection between public spending and the real sector of the economy. In a different study, Ilechukwu and Nwokoye (2015) investigated the long-run impact of exchange rate on industrial output in Nigeria. The study employed the ordinary least squares technique using annual time series data from 1980 to 2013. The results of the study showed that domestic capital, foreign direct investment, population growth rate, and real exchange rate are significant determinants of industrial output. Changes in external balance and inflation rate were found to have little or no effects on industrial output.

Bakare-Aremu and Osobase (2015) investigated the impact of monetary and fiscal policies on the performance of the industrial sector in Nigeria, employing the error correction modelling technique. The study found that monetary and fiscal policies have significant impact on manufacturing output in Nigeria: both in the short- and long-run. It also found that a long-run relationship exists among stabilization policies and industrial sector output. The study concluded that stabilization policies have a substantial impact on industrial performance, and that developing the industrial sector through fiscal and monetary policy adjustment measures will benefit many people. Akinlo and Lawal (2015) examined the impact of exchange rate on industrial output in Nigeria over the period 1986 to 2010, using the vector error correction model. The results confirmed the existence of a long-run relationship between industrial production index, exchange rate, money supply and inflation rate. However, exchange rate depreciation was found to have an insignificant impact on industrial output in the short-run, but had a positive impact in the long-run. Also, the results showed that money supply explained a very substantial proportion of variation in industrial output in Nigeria.

Obioma et al. (2015) analysed the effect of industrial development on economic growth in Nigeria for the period 1973 to 2013, using the ordinary least squares technique. The results showed that the influence of industrial output on economic growth is not statistically significant, though positively related to economic growth. Also, they found that savings had a positive significant impact on the economy; and that while inflation had a negative relationship, net foreign direct investment positively and significantly impacted on economic growth. Lawal (2016) examined the effect of exchange rate fluctuations on manufacturing output in Nigeria for the period 1986 to 2014, employing the autoregressive distribution lag (ARDL) method. He discovered that exchange rate fluctuations have long- and short-run relationships with manufacturing output in Nigeria. The result also showed that exchange rate has a positive relationship with manufacturing output, but not significant.

Iya et al. (2016) investigated the impact of industrialization on economic growth in Nigeria using data from 2001 to 2013. The study employed the ordinary least squares technique, and found that industrial output and industrial employment have a positive and significant impact on economic growth. It also discovered that economic growth was highly susceptible to changes in industrial output, and less susceptible to changes in industrial employment. Similarly, Aliya and Odoh (2016) examined the impact of industrialization on Nigeria's economy, using the Johansen co-integration and Granger causality tests. The co-integration results revealed that a long-run relationship exists among gross domestic product, industrial output, services, and agricultural output. Also, the results showed that agriculture, industry, and services have a significant positive relationship with gross domestic product. The causality results revealed that a bidirectional causal relationship exists between gross domestic product, agricultural output, industrial output, and the services sector.

Akekere et al. (2017) used the ordinary least squares technique to analyse the relationship between industrial sector growth and public infrastructure capital in Nigeria. The empirical results indicated that public capital infrastructure, human capital development, and inflation rate are negatively related to the growth of the industrial sector. Broad money supply and exchange rate, on the other hand, were found to have a positive relationship with industrial sector growth.

One major drawback of all the foregoing empirical literature is that their authors failed to recognize that industrial output may be endogenous in the economic growth model. Also, the methods of analysis adopted have several limitations in addressing the problem of endogeneity in a model. Thus, the authors did not use the simultaneous equation model technique to consider the interactions among macroeconomic policy variables, industrial output, and economic growth. Hence, this paper addressed this research gap by employing a system estimation method to examine the interrelationships between macroeconomic policy variables, industrial output, and economic growth in Nigeria.

3. Methodology

3.1 Analytical Framework

The analytical framework of the study is based on the augmented growth model by Mankiw et al. (1992). The model is like the Solow (1956) growth model, but is augmented with human capital. The Solow growth model was augmented with the accumulation of human capital. The model expressed output (*Y*) as a function of physical stock of capital (*K*), human capital (*H*), quantity of labour (*L*), and the coefficient of technical progress (*A*). This is expressed in functional as:

$$Y_t = f(K_t, H_t, AL_t) \qquad (1)$$

This can be written in Cobb-Douglas production form as:

$$Y_t = K_t^{\alpha} H_t^{\beta} (AL)_t^{1-\alpha-\beta} \qquad (2)$$

Where: $0 < \alpha < 1$; $0 < \beta < 1$; and $\alpha + \beta < 1$.

Mankiw et al. (1992) assumed that households save a fraction s_k of their income to invest in physical capital, and a fraction s_h to invest in human capital; and that human capital also depreciates in the same way as physical capital. The depreciation rates for physical capital is given by δ_k and human capital, δ_h, where $\delta_k = \delta_h = \delta$. Population growth rate is n and technology growth rate is g. When equation (2) is transformed into output per capita and solved, the steady state of output per capita is obtained as follows:

$$y_t = A_t k_t^{\alpha} h_t^{\beta} \qquad (3)$$

Where:

$$k_t = \left(\frac{s_k^{1-\beta} s_h^{\beta}}{n + g + \delta} \right)^{\frac{1}{1-\alpha-\beta}} \qquad (4)$$

$$h_t = \left(\frac{s_k^{\alpha} s_h^{1-\alpha}}{n + g + \delta} \right)^{\frac{1}{1-\alpha-\beta}} \qquad (5)$$

By substituting expression (4) and (5) into (3), output per capita in steady state becomes:

$$y_t = A_t \left(\frac{s_k}{n + g + \delta} \right)^{\frac{\beta}{1-\alpha-\beta}} \left(\frac{s_h}{n + g + \delta} \right)^{\frac{\alpha}{1-\alpha-\beta}} \qquad (6)$$

$$\ln y_t = \ln g_t + \frac{\beta}{1-\alpha-\beta} \ln \left(\frac{s_k}{n + g + \delta} \right)_t + \frac{\beta}{1-\alpha-\beta} \ln \left(\frac{s_h}{n + g + \delta} \right)_t + \varepsilon_t \qquad (7)$$

What is not stated in (3) and (6) can be captured by the error term, hence, equation (7).

Equation (7) represents output per capita in a logarithm form. The coefficients of the physical capital and human capital inputs are elasticity parameters. The model shows that investment in physical and human capital results in increased output.

Thus, the augmented Solow model gives output per capita as depending on the rate of technical change, capital stock and human capital (Mankiw et al., 1992). In empirical applications, the basic Solow model has been modified to obtain the augmented Solow growth model, where the rate of growth of output for a given country depends not only on technical change, capital and labour, but also on policy variables like trade, fiscal policy and monetary policy (Ologun, 2003; Easterly & Levine, 2001).

3.2 Model Specification

This study estimated a two-equation simultaneous model with real gross domestic product and industrial output as endogenous variables; and openness of the economy, gross fixed capital formation, exchange rate, money supply, and government expenditure as exogenous variables. The model is based on the augmented Solow growth model. Thus, the simultaneous equations model for this study is specified as follows:

$$\mathrm{RGDP_t} = \alpha_0 + \alpha_1 \mathrm{IND_t} + \alpha_2 \mathrm{OPEN_t} + \alpha_3 \mathrm{GFCF_t} + \varepsilon_t \qquad (8)$$

$$\mathrm{IND_t} = \beta_0 + \beta_1 \mathrm{EXR_t} + \beta_2 \mathrm{MS_t} + \beta_3 \mathrm{GEXP_t} + \mu_t \qquad (9)$$

Where:

RGDP = Real gross domestic product (₦bn)
IND = Industrial output (₦bn)
OPN= Openness of the economy (Ratio of sum exports and imports to real gross domestic product)
$GFCF$= Gross fixed capital formation (₦bn)
EXR= Exchange rate (₦/US$1.00)
MS= Money supply (₦bn)
$GEXP$= Government expenditure (₦bn)

From *a priori* considerations, it was expected that openness of the economy, gross fixed capital formation, exchange rate, money supply and government expenditure would be positively related to real gross domestic product and industrial output, that is, $\beta_1, \beta_2, \beta_3, \alpha_1, \alpha_2, \alpha_3 > 0$. Since the model is a simultaneous equations model, the rank condition of identification was used to ascertain the identification status of the model. The rank condition of identification is both a necessary and sufficient condition of identification. Thus, based on this condition, the two equations were identified.

3.3 Sources of Data

The scope of the data used in paper spanned from 1981 to 2017. The data were sourced from the Central Bank of Nigeria annual reports and statistical bulletins of 2017; the Nigerian National Bureau of Statistics (2017), and World Bank Development Indicators (2018).

3.4 Data Analysis and Model Tests

This paper adopted the three-stage least squares (3SLS) regression technique. The preliminary tests included the unit root test and the co-integration test. The unit root test was conducted using the Augmented Dickey-Fuller (ADF) technique. This was conducted to ascertain the order of integration of the variables. The long-run relationship among the variables was determined using the Johansen co-integration test. The 3SLS technique is a system of equations estimation technique used when right-hand side variables are correlated with the error terms, and there is both heteroskedasticity and contemporaneous correlation in the residuals. In addition, the ADF test was utilized to examine the time series characteristics of the variables to ascertain their levels of integration. Consider a simple autoregressive process of order one, i.e. $AR(1)$process:

$$Y_t = \rho Y_{t-1} + X_t \delta + \varepsilon_t \qquad (10)$$

where X_t are optional exogenous regressors that may consist of constant, or a constant and trend, ρ and δ are parameters to be estimated, and the ε_t are assumed to be white noise.

If $|\rho| \geq 1, Y$ is a non-stationary series and the variance of Y increases with time and approaches infinity. If $|\rho| < 1, Y$ is a stationary series, thus the hypothesis of stationarity can be evaluated by testing whether the absolute value of X_t is strictly less than one.

The standard Dickey-Fuller test is carried out by estimating (10) after subtracting Y_{t-1} from both sides of the equation:

$$\Delta Y_t = \alpha Y_{t-1} + X_t' \delta + \varepsilon_t \qquad (11)$$

Where $\alpha = \rho - 1$,

However, the ADF test constructs a parametric correction for higher-order correlation by assuming that the Y series follows an $AR(p)$ process; and adding p lagged difference terms of the dependent variable Y to the right-hand side of the test regression given as:

$$\Delta Y_t = \alpha Y_{t-1} + X_t' \delta + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \dots + \beta_p \Delta Y_{t-p} + V_t \qquad (12)$$

The null and alternative hypotheses are written as: $H_0: \alpha = 0$, and $H_1: \alpha < 0$; and evaluated using the conventional t-ratio for α: $t\_\alpha = \alpha\hat{}/S\_\alpha\hat{}$, where $\hat{\alpha}$ is the estimate of α, and $S_{\hat{\alpha}}$ is the coefficient standard error.

Having examined the stationarity properties of the time series, the multivariate Johansen co-integration test was carried out to ascertain whether a long-run relationship exists between the variables. Johansen (1991, 1995) developed a vector autoregressive (VAR)-based cointegration tests to determine a long-run relationship.

Consider a VAR of order p:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots + A_p Y_{t-p} + BX_t + \varepsilon_t \tag{13}$$

Where: Y_t is a k-vector of non-stationary $I(1)$ variables, X_t is a d-vector of deterministic variables, and ε_t is a vector of innovations.

We may rewrite this VAR as:

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + BX_t + \varepsilon_t \tag{14}$$

Where:

$$\Pi = \sum_{i=1}^{p} A_i - I; \ \Gamma_i = -\sum_{j=i+1}^{p} A_j$$

Granger's representation theorem asserts that if the coefficient matrix Π has a reduced rank $r < k$, then there exist $k \times r$ matrices α and β, each with rank r such that $\Pi = \alpha\beta'$ and $\beta' Y_t$ is I(0). r is the number of cointegrating relations (the *cointegrating rank*) and each column of β is the cointegrating vector. The elements of α are known as the adjustment parameters in the Vector Error Correction model. Johansen's method estimates the Π matrix from an unrestricted VAR, and tests whether we can reject the restrictions implied by the reduced rank of Π.

4. Empirical Analysis

This section presents the estimated results and analysis. It also presents and analyses the preliminary test results (unit root and co-integration tests). The three-stage least squares estimation results are interpreted and discussed in the subsequent section.

4.1 Unit Root Tests

Tables 1 and 2 present the results of the ADF unit root tests of the variables at levels and first differences, respectively. The ADF regressions included an intercept but not a trend.

Table 1: Results of ADF Unit Root Tests at Levels

(Augmented Dickey-Fuller Regressions include an intercept but not a trend)

Variable	Lag	ADF Test Statistic	5% Critical Value	Remarks
RGDP	1	-2.03	-2.96	Non-stationary
IND	0	0.77	-2.95	Non-stationary
OPN	2	-2.18	-2.30	Non-stationary
GFCF	3	1.98	-2.97	Non-stationary
EXR	0	-0.24	-2.95	Non-stationary
MS	3	-2.89	-2.97	Non-stationary
GEXP	3	-1.97	-2.97	Non-stationary

Source: Author's Results using Eviews 8.0

Table 2: Results of ADF Unit Root Tests at First Difference
(Augmented Dickey-Fuller Regressions include an intercept but not a trend)

Variable	Lag	ADF Test Statistic	5% Critical Value	Order of Integration	Remarks
D(RGDP)	0	4.49	-3.81	I(1)	Stationary
D(IND)	0	-5.37	-2.95	I(1)	Stationary
D(OPN)	0	-3.61	-2.29	I(1)	Stationary
D(GFCF)	8	-3.36	-2.99	I(1)	Stationary
D(EXR)	0	-5.37	-2.96	I(1)	Stationary
D(MS)	3	-5.73	-2.97	I(1)	Stationary
D(GEXP)	0	-5.35	-2.96	I(1)	Stationary

Source: Author's Results using Eviews 8.0
Note: "D" denotes first difference. The different values for the lag length are because of the automatic lag selection criteria based on Schwarz Information Criterion (SIC).

Table 1 shows that real gross domestic product (RGDP), industrial output (IND), openness of the economy (OPN), gross fixed capital formation (GFCF), exchange rate (EXR), money supply (MS) and government expenditure (GEXP) are all non-stationary at the 5 percent level of significance. This is because the ADF statistics for these variables are less than their critical values in absolute terms. As shown in Table 2, the unit root tests of the variables at their first differences show that they are all stationary after their first differencing. Thus, all the variables are difference stationary, that is, integrated of order one, denoted as I(1).

4.2 Co-integration Tests

Given that the time series properties of the data have been ascertained, the study proceeded to conduct co-integration tests using the Johansen multivariate co-integration test. Tables 3 and 4 present the results of the Johansen co-integration test.

Table 3: Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	T race Statistic	0.05 Critical Value	Probability**
None *	0.99	291.11	125.62	0.000
At most 1 *	0.87	152.67	95.75	0.000
At most 2*	0.72	90.28	69.82	0.001
At most 3*	0.59	51.18	47.86	0.024
At most 4	0.37	23.31	29.80	0.231
At most 5	0.21	9.23	15.49	0.344
At most 6	0.07	2.10	3.84	0.147

Trace test indicates 4 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Results Extract from Eviews 8.0

Table 4: Unrestricted Co-integration Rank Test (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Probability**
None *	0.99	138.44	46.23	0.000
At most 1 *	0.87	62.40	40.08	0.000
At most 2*	0.72	39.10	33.88	0.011
At most 3*	0.59	27.87	27.58	0.046
At most 4	0.37	14.08	21.13	0.359
At most 5	0.21	7.12	14.26	0.474
At most 6	0.07	2.10	3.84	0.147

Note: Max-Eigen value test indicates 4 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Results Extract from Eviews 8.0

The co-integration test based on the trace test indicates that there are four co-integrating equations at the 5 percent level as indicated in Table 3. Also, from Table 4, the maximum Eigen value test indicates three co-integrating equations at the 5 percent level. Thus, these results indicate that a long-run relationship exists among the endogenous and exogenous variables in the system of equations.

5. Regression Results and Discussion of Findings

5.1 Presentation and Interpretation of Regression Results

Tables 5 and 6 report the results of the model using the three-stage least squares method. Table 5 presents results on the economic growth equation, while Table 6 presents results on the industrial output equation.

Table 5: Estimated Coefficients of the Economic Growth Equation

Endogenous Variable: RGDP				
Exogenous Variable	**Coefficient**	**Standard Error**	**T-Ratio**	**Probability**
C	77.01	35.35	2.18	0.034
IND	0.029	0.005	5.90	0.000
OPN	297.39	126.17	2.36	0.021
GFCF	0.048	0.009	5.31	0.000
*R-Squared*0.99 *R-Bar-Squared* 0.98 *DW-Statistic* 1.72				

Source: Author's computation using Eview 8.0

Table 6: Estimated Coefficients of the Industrial Output Equation

Endogenous Variable: IND				
Exogenous Variable	**Coefficient**	**Standard Error**	**T-Ratio**	**Probability**
C	6460	433	14.94	0.000
EXR	68.6	34.7	1.98	0.053
MS	1.38	1.30	1.06	0.292
GEXP	-2.47	2.72	-0.91	0.368
R-Squared = 0.80; *DW Statistic* = 1.83; *R-Bar Squared* = 0.78				

Source: Author's computation using Eview 8.0

The coefficients of determination of the economic output equation, R-squared (R^2) is about 0.99, and the adjusted R-squared ($\bar{R}^2$) is 0.98: and these are both high. This implies that the explanatory power of the model is satisfactory. The Durbin Watson statistic of about 1.72 depicts the absence of autocorrelation in the economic growth equation. The signs of the estimated coefficients of industrial output, trade openness and gross fixed capital formation in the equation conform to their *a priori* expectations. The coefficient of industrial output (IND) is positive and significant at the 1 percent level. This implies that industrial output has a significant positive impact on economic growth in Nigeria. The coefficient of the openness of the economy (OPN) is positively signed. Its coefficient is statistically significant at the 5 percent level. Thus, economic openness impacts positively on economic growth in Nigeria. The coefficient of the gross fixed capital formation (GFCF) is positive. Its coefficient passed the statistical test of significance at the 1 percent level. Hence, gross fixed capital formation has a significant positive impact on economic growth in Nigeria.

Turning now to the industrial output equation, the R-squared (R^2) and the adjusted R-squared ($\bar{R}^2$) are approximately 0.80 and 0.78, respectively. Thus, the overall goodness of fit for the equation is also quite impressive. The Durbin Watson statistic of 1.83 indicates the absence of serial correction in the equation.

The signs of all the estimated coefficients of the exogenous variables in the equation conformed to their *a priori* expectations, except for government expenditure. The coefficient of exchange rate (EXR) is positive and significant at the 5 percent level. This shows that exchange rate has a significant impact on industrial output in Nigeria. The coefficient of money supply (MS) is positive. However, it is insignificant even at the 10 percent level. The implication is that money supply does not significantly influence industrial output in Nigeria. Surprisingly, government expenditure (GEXP) is negatively signed. Its coefficient failed the test of statistical significance even at the 10 percent level. Thus, government expenditure does not have any significant impact on industrial output in Nigeria.

5.2 Discussion of Findings

Prior studies have noted the importance of macroeconomic policies on the industrialization process and growth of an economy. Some studies such as those of Eze and Ogiji (2013), Bakare-Aremu and Osobase (2015), and Ilechukwu and Nwokoye (2015) showed that macroeconomic policies play a crucial role in the industrialization and economic growth of a country. In this paper, exchange rate was found to have a positive significant impact on industrial output in Nigeria. This finding is in agreement with those obtained by Owolabi and Adegbite (2012), Akinlo and Lawal (2015), and Ilechukwu and Nwokoye (2015): all of whom found a significant positive relationship between exchange rate and industrial output in Nigeria. However, the finding does not support the previous research results by Lawal (2016) who found that exchange rate has a positive insignificant impact on industrial output.

Another important finding of this study was that industrial output has a positive significant effect on economic growth in Nigeria. This finding corroborates the ideas of Aliya and Odoh (2016) and Iya et al. (2016) who found that industrial output has a positive significant impact on economic growth in Nigeria. However, this outcome is contrary to that of Obioma et al. (2015) who found that industrial output has no significant impact on economic growth. However, contrary to expectations, this study did not find a significant relationship between money supply and industrial output. Another surprising outcome is that government expenditure was found to have a negative insignificant impact on industrial output. These results are in accord with recent studies such as by Iweriebor et al. (2015) indicating that government spending has no significant effect on industrial output in Nigeria. These relationships may partly be explained by the poor Nigerian fiscal and monetary policies that are not consciously geared towards encouraging industrialization process in the country. Thus, these findings raise intriguing questions regarding the impact and extent to which fiscal and monetary policies in Nigeria act as drivers of industrialization and economic growth. An implication of this is the possibility that Nigeria may not be able to achieve a sustainable economic growth and development without appropriate fiscal and monetary policies tailored towards driving the industrial process of the economy.

6. Conclusion and Recommendations

The aim of this paper was to examine the interrelationship among macroeconomic policies, industrial output, and economic growth in Nigeria. The findings revealed that there exist long-run relationships among the variables. Industrial output was found to influence economic growth positively in Nigeria.

The implication of this finding is that industrialization plays a significant role in enhancing economic growth and development in Nigeria. Hence, to achieve rapid economic growth, Nigeria should develop its industrial sector. Another important finding was that exchange rate has a positive significant effect on industrial output in Nigeria. This implies that in times of the depreciation of the exchange rate, the country can benefit a lot in terms of increased industrial output, which in turn will enhance growth of the economy.

The surprising findings from this study were that money supply and government expenditure do not have any significant impact on industrial output. These findings suggest that, in general, fiscal, and monetary policies have not yielded the desired results in encouraging industrialization in Nigeria. These findings could be used to help policymakers in Nigeria have a proper perspective of fiscal and monetary policies, and channel them in the right direction to achieve their intended purpose for the country.

Thus, it should be noted that the findings of the study, based on a more efficient estimation technique, do not significantly differ from other findings that adopted different approaches. Nonetheless, the present study confirms some previous findings and contributes additional evidence that suggests practical policy implications for future conduct of fiscal and monetary policies in Nigeria. First, fiscal policies should be formulated with a clear-cut view of addressing the industrial needs of the country. Second, the government should ensure that its monetary policies provide the needed boost and enabling environment for industries to thrive in the country. Lastly, the government should effectively provide more funds for industrial development in Nigeria.

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