

## **Evaluation of the Nigerian Industrial Sector and Economic Growth in the Face of Sustainable Development Goals**

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### **Abstract**

Industry plays a very important role for economic growth of a country. The industrial sector generates revenue, creates services, brings about incomes and creates employment. Over the years, the Nigerian economy has recorded a decline in industrial growth with some industries recording closures as a result of difficult operating environment. The problem before the study is that despite the abundant natural and human resources, the industrial sector has been operating under difficult circumstances and closures reported in certain areas. Few studies have investigated to examine the role of industry in economic growth of Nigeria and the research intends to fill this gap and update the literature. The objective of the study is to evaluate the industrial sector on economic growth in Nigeria, and the hypothesis formulated was that industrial output has no effect on economic growth in Nigeria. The research is a quantitative research and time series and secondary data was used for the study over a period of 35 years from 1981 to 2016. Secondary data was used extracted from the World Bank indicators. Stata was used to analyse the results and the results revealed that industrial output has an effect on economic growth in Nigeria. It was recommended that government should encourage the growth of industries in Nigeria through establishment of favourable policies for industrial development.

**Keywords:** *Gross domestic product, Industrial output, Foreign direct investment, Inflation, Savings*

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### **Background to the Study**

Industry plays a very important role in building any economy. Highly industrialized countries are developed economies. Industrialization grows an economy, creates goods and services, provides jobs and incomes, increases the standard of living, and provides a healthy population. In defining the industrial sector, it is seen to be a section of the economy which consists of the manufacturing that provides goods and services and the structure of any economy should be one which has industry playing a dominant role in its composition.

The sustainable development goals (SDGs) are a new universal goals and targets which were initiated in 2015. The SDGs followed and expanded on the Millennium Development Goals (MDGs), and as explained by Ford (2015) the need for another set of goal emanated when no mention of human rights and economic development were specifically addressed by the MDGs. As the MDGs applied to countries, in reality they were targets for poor countries to achieve, with finance from wealthy states. SDGs set to end poverty; protect the planet and ensure prosperity for all through 17 goals. Two of the goals identified with this study are to promote inclusive and sustainable economic growth, employment and decent work for all; and, to build resilient infrastructure, promote sustainable industrialization and foster innovation.

Globally unemployment is on the increase and poverty levels are also on the increase. The emphasis for investment arises so that employment can be created and poverty levels reduced. Similarly, industrialization is a key to revenue generation, wealth creation and poverty eradication. It therefore becomes important to build the infrastructure that will make industry operate and bring about the needed economic growth.

The structure of the Nigerian economy is one which was dominated by the oil and gas sector followed by agriculture and then industry occupying the least position. The dominance of oil and gas sector brought about over 80% revenue to the country, making it to be the driver of the economy, leading to neglect in agriculture and decline in industry. Chete, Adeoti and Ogundele (2016) explain the structure of the Nigerian economy to be one driven by the oil and gas sector accounting for 95% of export earnings and 85% of government revenue between 2011 and 2012, with the industrial sector consisting of mining, manufacturing and services accounting for a tiny portion of 10% of the economy.

The Nigerian economic indicators showed that Gross Domestic Product (GDP) growth rate in 2017 was 3.23% and annual GDP growth rate was 0.55%. GDP at constant prices was N16,450,433 million, GDP was 405USD billion, GDP per capita was 2,458 USD, and gross fixed capital formation was N2,380,380 million. Unemployment rate was 14.2%, inflation rate was 15.98%, interest rates was 14%, government debt to GDP was 18.6%, balance of trade stood at N150,317 million and GDP from the manufacturing sector was N1,529,173 million (Trading Economics, 2017).

The industrial sector is expected to contribute to the economic growth of any country. The output created by the sector is expected to create jobs, incomes, wealth, and contribute to the standard of living of the populace. The industrial sector therefore creates productivity, profitability; investment and growth. Industrial output, total savings by Government, foreign direct investment and inflation are therefore viewed as the components of the industrial sector which are expected to contribute to economic growth. Yua, Dosia, Grazzic and Lei

(2017) inform on another view that improved macroeconomic policies, and increased domestic demand and shift from capital, labour and entrepreneurship into the industrial sector, contributed to economic growth of Africa.

### **Statement of the Problem**

The problem before the study is despite the attempts to grow the Nigerian economy through the various programmes initiated by Government, not much progress has been recorded with the industrial sector contribution to economic growth. Studies have not thoroughly investigated to evaluate performance of the industrial sector on the Nigerian economy, and the few researches conducted have not been current. Many researches were made in countries and regions like Ethiopia (Wakeford, Gebreeyesus, Ginbo, Yimer, Manzambi, Okereke, Black, & Mulugetta, 2017), Sub-Saharan Africa (Rekiso, 2017), developing countries (Szirmai, 2012), South Africa (Morris & Fessehaie, 2014) and China (Yua, Dosia, Grazzic & Lei, 2017), few have been conducted on the Nigerian economy. The study intends to address this gap and investigate the industrial sector on economic growth in Nigeria by improving the literature and give an up to date analysis on industrial sector and economic growth in Nigeria. Morris and Fessehaie (2014) argued for commodities based industrialization strategy and opined that economies of African countries have always been targeted toward economic growth where exports are encouraged to foster the needed economic growth which will lead to industrialization. This has not been possible and it becomes important to investigate how industrialization can foster economic growth.

Based on the statement of the problem, the following questions are identified for the study:

1. In what ways can industrial output have an effect on economic growth?
2. To what extent is foreign direct investment having an effect on economic growth?
3. In what way does inflation has an effect on economic growth?
4. To what extent are total savings having an effect on economic growth in Nigeria?

### **Objectives of the Study**

The main objective of the study is to evaluate the industrial sector on economic growth in Nigeria. The specific objectives are:

1. To examine industrial output on economic growth in Nigeria
2. To investigate the effect of foreign direct investment on economic growth in Nigeria
3. To evaluate the effect of inflation on economic growth in Nigeria
4. To evaluate the effects of total savings by government on economic growth in Nigeria

### **Study Hypotheses**

In line with the research questions and objectives of the study, the hypotheses are formulated in null form

- $H_{01}$ : Industrial output has no effect on economic growth in Nigeria  
 $H_{02}$ : Foreign direct investment has no effect on economic growth in Nigeria  
 $H_{03}$ : Inflation has no effect on economic growth in Nigeria  
 $H_{04}$ : Total savings has no effect on economic growth in Nigeria

The paper is divided into five sections. Section one is the introduction and covers the background to the study, research questions, objectives of study and hypotheses of study. Section two is the literature review where the views of researchers and theories of economic

growth are discussed. Section three is the methodology; data analysis is presented in section four and the conclusion and recommendations are in section five.

### **Literature Review**

Adewale (2017) conducted a study to investigate the effect of import substitution industrialization on the economic performance in the group of BRICS (Brazil, Russia, India, China and South Africa). Data was extracted from the World Bank Development indicators from 1960 to 2016 in econometric estimations. The research was able to argue that import substitution industrialization policy helped to catalyse the industrial process with the effects being more convergent in the short run. It was recommended that less developed countries should adopt the economic integration and home-grown Import Substitution Industrialization policy to substitute imports in the short run.

Yu, Dosi, Grazz and Lei (2017), explored the dynamics of growth by investigating the micro relationships linking productivity, profitability, investment and growth on China's manufacturing firm-level data set over the period 1998-2007. They found that productivity variations, rather than relative levels are the prevalent productivity-related determinant of firm growth.

Quaicoe, Aboagye and Bokpin (2017) conducted their research on the free zones in Ghana. They wanted to ascertain the impact of free zones programme on economic growth in Ghana. Their model was a vector error correction model on a quarterly time series data covering a period of 17 years from 1998 to 2015. Their results showed that both free zones exports and free zones investments have significant negative relationship with economic growth. Trade openness also had a significant negative relationship with economic growth but insignificant positive relationship with investment and export. They concluded that the free zones programme did not serve their purpose of promoting economic growth in Ghana.

Barrell and Pain (1997) investigated the extent of multinational activity and the share of world trade which had risen over the past two decades on economic growth. This led to renewed interest within Europe in the impact of multinational enterprises on employment, investment and trade, and the structure of economic growth. Their research discussed the factors behind the continued growth of foreign direct investment and its wider consequences on home and host economies. The acquisition of firm-specific knowledge-based assets was found to be an important factor behind the growth of foreign direct investment, suggesting that such investments were likely to be an important channel for the diffusion of ideas and technologies.

### **Sustainable Development Goals: Decent Work and Economic Growth, and Industry, Innovation and Infrastructure**

The 2030 Agenda for sustainable development identified 17 goals which are expected to transform the world. These are no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; and partnerships for the goals (<http://www.un.org/sustainabledevelopment/>). Of these goals, the Paris agreement on climate change started by addressing the need to limit the rise of global temperatures and it was expected that countries, businesses and civil societies together with the United Nations,

mobilize towards the efforts to achieve these goals. With the achievement of these goals, the world will be a better place to live.

A continued lack of decent work opportunities, insufficient investments and under-consumption led to an erosion of the basic social contract underlying democratic societies (<http://www.un.org/sustainabledevelopment/>). It was estimated by the United Nations (2015) that unemployment increased globally from 170 million in 2007 to nearly 202 million in 2012 out of which 75 million are young men and women; nearly 2.2 billion people live below US\$2 poverty line and that poverty eradication is only possible through stable well-paid jobs; and that about 470 million jobs are needed globally into the labour markets between 2016 and 2030. The major cause of this situation was the continued lack of decent work opportunities, insufficient investments, and under-consumption, hence, the main focus of the goal is to promote inclusive and sustainable economic growth, employment and decent work for all.

Job creation becomes a major challenge to many economies particularly developing countries and parts of the targets of the SDGs are to among other things sustain per capita growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries; and, promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro, small and medium scale enterprises, including access to financial services (<http://www.un.org/sustainabledevelopment/>).

In the effort to building infrastructure and industry, the United Nations (2015) identified that basic infrastructure of roads, electricity, sanitation and communication were a challenge in developing countries; quality infrastructure relates positively with the achievement of social, economic and political goals; inadequate infrastructure leads to lack of access to markets, jobs, information and training, thus creating a major barrier to doing business; manufacturing is an important employer accounting for 470 million jobs globally in 2009 and 16 per cent of the global work force of 2.9 billion; and that industrialization's job multiplication effect has positive impact on the society. Investments in infrastructure is therefore important, inclusive and sustainable industrial development is the primary source of income generation, and technological progress is the foundation of efforts to achieve environmental objectives such as increased resource and energy efficiency. The main focus of this goal is to build resilient infrastructure, promote inclusive and sustainable industrialization, increase access of small scale industry in developing countries, and support domestic technology, development, research and innovation in developing countries (<http://www.un.org/sustainabledevelopment/>).

### **Challenges of the Industrial Sector in Nigeria**

The major challenges of the Nigerian industrial sector are identified as infrastructure, corruption, and security.

#### **Infrastructure**

The state of infrastructure in Nigeria has been one which is grossly inadequate and declines over the years. There is poor and epileptic power supply made production to be very expensive and almost comatose in some cases. Availability of potable water is also a problem facing the Nigerian economy in which a sizeable number of individuals are not able to get adequate access

to clean water. Transportation especially road networks has equally depreciated making transportation to be a herculean task for the industry.

### **Corruption**

Corruption has been prevalent in the Nigerian economy for long and has been a problem to industry. Nigeria was ranked high in corruption which has affected economic growth and development in many areas. Investments and foreign direct investments inflows are greatly affected with corruption with effects on foreign direct investment flows into the country.

### **Security**

Security is a major challenge to industry. Internal security particularly religious and ethnic disturbance, kidnapping and theft have had negative and debilitating effects on the economic environment and businesses in general. Security challenges drive businesses away and affects the citizenry negatively.

### **Economic Growth Theory / Models**

Pettinger (2017) and Jhingan (2010) identify some economic theories that explain the growth behaviour of countries, Mercantilism, Harrod – Domer models, Solo – Swan model or Neo-classical theory, New economic growth or the Endogenous growth model, and Keynesian growth theory.

Pettinger (2017) identifies the Mercantilism economic theory of trade as a practice where the government seeks to regulate the economy and trade in order to promote domestic industry. Mercantilism policies restrict imports and foster domestic industries. Mercantilism was popular at the industrial revolution and the theory argued that a country could be made better off by seeking to accumulate gold and increasing exports. The classical theory developed by Smith (1776) was the early proponents of Mercantilism and emphasized on increasing returns to scale and argued that several factors that enabled increase in economic growth to be the role of markets in determining supply and demand; the productivity of labour, where per capita income was determined by state of the skill, dexterity, and judgment with which labour is applied in any nation; the role of trade in enabling greater specialization; and increasing returns to scale, that is specialization as seen in modern factories or economies of scale of increased production.

Harrod (1948, as cited in Jhingan, 2010) explained that growth may occur in an economy, that once the steady growth rate is interrupted and economy falls into disequilibrium, cumulative forces tend to perpetuate the divergences thereby leading to either secular deflation or secular inflation. Harrod model was based on three distinct growth rates, first there is actual growth rate determined by the savings ratio and capital-output ratio. Secondly there is the warranted growth rate which is the full capacity growth rate of incomes of an economy, and, thirdly, the natural growth rate represented by the welfare optimum.

Domar (1957, as cited in Jhingan, 2010) built his model around the question since investment generates income on one hand and increases productive capacity on the other hand, at what rate should investment increase in order to make the increase in income equal to the increase in productive capacity, so that full employment is maintained? Domar (1957) answers this question by forging a link between aggregate supply and aggregate demand.

Some of the weakness of the two models is that they failed to consider changes in the general price level; that they ignored the effect of government programmes on economic growth; and that they failed to draw a distinction between capital goods and consumer goods.

Solow – Swan (1956, as cited in Jhingan, 2010) built the model of economic growth as a continuous production function linking output to the inputs of capital and labour which leads to the steady state equilibrium of the economy. Pettinger (2017) explains that Neo-classical theory looks at growth based on supply-side factors such as labour productivity, size of the workforce, and factor inputs. The Solow – Swan model however failed to look at an investment function and the model was based on the assumption of labour augmenting technical progress.

New economic growth model or the Endogenous growth model as stated by Jhingan (2010) emerged as a reaction to the omissions and deficiencies in the Solow—Swan neoclassical growth model, by explaining that the long run growth rate of an economy was dependent on exogenous factors of the neoclassical growth theory. The two exogenous factors being the rate of population growth and the rate of technological progress and that is independent of the savings rate. This study identifies with the new growth model or exogenous growth model because emphasis is made on technical progress resulting from the rate of investment, the size of the capital stock, and the stock of human capital which Nigeria has with a growing population.

### Methodology

The research is a quantitative research and time series covering a period of 35 years from 1981 to 2016. Secondary data was used for the research was extracted from the World Bank indicators, 2016. The dependent variable is gross domestic product while the independent variables are industrial output, inflation rate, foreign direct investment inflows and gross savings. STATA was used to analyze the results and a multiple linear regression model of Obioma, Uchenna and Alexandra (2015) was adopted and updated for the research. The regression model is expressed as follows:

$$LnGDP = \alpha + \beta_1(LnINDUS)_i + \beta_2(FDI)_i + \beta_3(INF)_i + \beta_4(SAV)_i + \varepsilon$$

Where,

<i>LnGDP</i>	= the natural log of gross domestic product
<i>LnINDUS</i>	= the natural log of industrial output
<i>FDI</i>	= foreign direct investment inflows
<i>INF</i>	= inflation rate
<i>SAV</i>	= gross savings
$\alpha$	= constant
$\beta_1 \dots \beta_4$	= coefficients of the regresses
<i>i</i>	= the time period
$\varepsilon$	= error term

### Independent Variables Acronym, Name and Hypothesis Predictions

The independent variables acronym, name and A priori expectation of the independent variables with the dependent variables is shown in table 1.

**Table 1: Independent variables acronym, name and hypothesis predictions**

Variable Acronym	Variable Name	Predicted Relationship
<i>LnINDUS</i>	Industrial output	Positive
<i>FDI</i>	Foreign direct investment	Positive
<i>INF</i>	inflation	negative
<i>SAV</i>	Gross savings	Positive

### Data Analysis

The correlation results which establishes the nexus between all the variables used in the study are shown in table 1

**Table 2: Correlation matrix**

Variable	GDP	INDUS	FDI	INF	SAV
GDP	1				
INDUS	0.779	1			
FDI	-0.4197	-0.3016	1		
INF	-0.3344	0.0334	0.5753	1	
SAV	0.3688	0.1468	-0.1357	-0.2020	1

**Source:** STATA Output

The correlation table shows how strongly or weakly the variables are related. The contribution of the industrial sector is positive strongly correlated with economic growth while gross savings is positive but weakly correlated with economic growth. On the contrary, both FDI and inflation rate are negatively and weakly related with economic growth. The results therefore suggest that only industrial output has a strong nexus with economic growth in Nigeria.

**Table 3: Regression Results**

Variable	Coefficient	P-Value
Constant	-4.105	0.012
INDUS	0.7161	0.0000
FDI	-0.0004	0.838
INF	-0.0303	0.035
SAV	0.0066	0.036
R <sup>2</sup>	0.742	
F-Stats	22.31	0.0000

**Source:** STATA Output

To assess the impact of industrial output on economic growth, the regression analysis was conducted. From the summary of regression results, the coefficient of the constant is -4.105. The coefficient of the industrial output shows that industrial output has a positive and significant impact on economic growth. Savings has a positive but not significant impact on economic growth, whilst FDI and INF have negative effects. The R<sup>2</sup> value is 0.742, reflecting that there is a model fit of the variables and that 74.2% of the independent variables are explained in the dependent variable. Substituting the variables into the regression equation:

$$LnGDP = \alpha + \beta_1(LnINDUS)_i + \beta_2(FDI)_i + \beta_3(INF)_i + \beta_4(SAV) + \epsilon$$

Reveals the following:

$$LnGDP = -4.105 + 0.7161LnINDUS - 0.0004FDI - 0.0303INF + 0.0066SAV$$



### **Test of Hypotheses:**

#### **Decision Rule**

The decision rule is that if  $p < 0.05$  we reject the null hypothesis, otherwise we fail to reject the null hypothesis.

#### **Test of Hypothesis One**

**H<sub>01</sub>:** industrial output has no effect on economic growth in Nigeria

From the results, the p value for industrial output is 0.000 ( $0.000 < 0.05$ ). The study rejects the null hypothesis and concludes that industrial output has an effect on economic growth in Nigeria. The result conforms to the expectation of the study where a positive effect was expected between industrial output and economic growth, and the outcome of this result provides evidence in support of industrial output a determinant factor on economic growth. The statistical implication of this result is that a 1% increase in industrial output increases economic growth by 0.72%. The economic implication is that industrial output plays an important role in economic growth and is contributing to economic growth.

#### **Test of Hypothesis Two**

**H<sub>02</sub>:** foreign direct investment has no effect on economic growth in Nigeria

From the results, the p value for foreign direct investment is 0.838 ( $0.838 > 0.05$ ). The study fails to reject the null hypothesis and conclude that foreign direct investment has no effect on economic growth in Nigeria. The outcome of this result did not provide evidence in support of foreign direct investment on economic growth in Nigeria. The result did not conform to the expectation of the study where a positive result was expected between foreign direct investment and economic growth. The statistical implication of the result is that if economic growth will increase by 1% foreign direct investment will drop by 0.04%. The economic implication is that foreign direct investment is not contributing to economic growth in Nigeria. The results agree with the research of Akinlo (2004) who concluded that foreign direct investment has no effect on economic growth.

#### **Test of Hypothesis Three**

**H<sub>03</sub>:** inflation has no effect on economic growth in Nigeria

From the results the p value for inflation is 0.035 ( $0.035 > 0.05$ ). The study fails to reject the null hypothesis and conclude that inflation has no effect on economic growth in Nigeria. The outcome of this result did not provide evidence in support of inflation on economic growth in Nigeria. The result conforms to the expectation of the study where a negative result was expected between inflation and economic growth in Nigeria. The statistical implication of the result is that if economic growth will increase by 1% inflation will drop by 3.03%. The economic implication is that inflation is not contributing to economic growth in Nigeria. The findings of the research agree with the study of Omoke (2010) who found out that there is no co-integrating relationship between inflation and economic growth in Nigeria.

#### **Test of Hypothesis Four**

**H<sub>04</sub>:** total savings has no effect on economic growth in Nigeria

From the results the p value for total savings is 0.036 ( $0.036 > 0.05$ ). The study fails to reject the null hypothesis and conclude that total savings has no effect on economic growth in Nigeria. The outcome of this result did not provide evidence in support of total savings on economic growth in Nigeria. The result did not conform to the expectation of the study where a positive result was expected between total savings and economic growth in Nigeria. The statistical

implication of the result is that if economic growth will increase by 1% total savings will drop by 0.66%. The economic implication is that total savings by government is not contributing to economic growth in Nigeria.

### **Conclusion and Recommendations**

Looking at industrial output and economic growth in Nigeria, the study concludes that there is an effect between industrial output and economic growth in Nigeria. The result conforms to the expectation of the study and the statistical implication is that industrial output is significant to economic growth in Nigeria. Foreign direct investment has no effect on economic growth in Nigeria. The statistical implication is that an increase in economic growth, leads to a decrease in foreign direct investment. Inflation has no effect on economic growth in Nigeria. The statistical implication is that if economic growth were to increase, inflation will drop. Total savings has no economic growth in Nigeria. The implication of this result is that if economic growth were to increase, total savings will drop.

Based on the outcome of the results, the study recommends the following:

1. Government should continue to support industries in Nigeria by implementing policies that will be friendly for businesses to operate.
2. Government should increase the level of foreign direct investment for it to have an effect on economic growth.
3. Government should continue to encourage achieving low inflation rates for industries to operate successfully and continue to have an effect on economic growth.
4. Government should continue reduce the level of its savings so that economic growth can be achieved.

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