



THE IMPACT OF INDUSTRIALIZATION ON ECONOMIC GROWTH:  
THE NIGERIA EXPERIENCE (2000-2013)

JELILOV, Gylych (Ph.D);<sup>1</sup>

ENWEREM, Hart Iheoma;<sup>1</sup>

and

ISIK, Abdurahman (Ph.D)<sup>1</sup>

<sup>1</sup>Department of Economics,  
Nigerian Turkish Nile University, Nigeria

ABSTRACT

The work focused on the Impact of Industrialization on Economic Growth: The Nigeria Experience (2000-2013). The study sets three major objectives, which include investigating the effect of fiscal and monetary policy on Gross Domestic Product (GDP), determining the relationship between government spending and industrial development and to determine the effect of budget on investment or employment generation. The study only utilized secondary data from the 2011 Central Bank of Nigeria Statistical Bulletin and the Nigerian National Bureau of Statistics. The study specified a workable model, which has GDP as the dependent variable while industrial output, foreign direct investment, interest rate, foreign exchange rate and inflation rate were independent variables. Ordinary least square (OLS) technique, F-test was used as analytical techniques. The study revealed that industrialization has a negative impact on economic growth in Nigeria in the long run. This was confirmed by the F-test value (559.02). The study recommends amongst others, that the government should redirect its industrial and investment policy so as to increase output of the domestic production (RGDP), flexible exchange rate and control inflation rate since that showed that increase in exchange and inflation rate, decreased output, industrial and investment policy should be flexible on infant industries so as to encourage productivity and improve GDP.

*Keywords:* Industrialization, Growth, Nigeria, GDP

*JEL Index Classifications:* F43, Q31, O14.

## 1. INTRODUCTION

The overriding objective of industrial policy is to accelerate the pace of industrial development by radically increasing value-added at every stage of the value chain. Nigeria's resources will no longer, in the main be traded in their primary state. The government will emphasize increases in Total Factor Productivity (TFP) by pursuing knowledge, skill and intensive production on the basis of available best practices. Nigeria's Industrial Development Strategy will encourage forward and backward linkages within a few chosen niches (Iwuagwu, 2011). Government will continue to provide the enabling environment for private sector leadership, facilitate renewal for sunset industries, and encourage innovators (Djeudo, 2013).

Industries are very important in a developing country like Nigeria because their marginal revenue products of labour are higher than the marginal revenue product of labour in the agricultural sector. Thus, the releasing of labour force from the agricultural sector to the industrial sector increases the marginal product of labour in the agricultural sector and increases the overall revenue and output of the society (economic-growth). Therefore, industrialization is a *sin qua non* for sustainable economic growth in Nigeria and it is what the present regime needs to achieve its change agenda. The tendency of the industrial sector to stimulate more economic growth has prompted many economists to formulate theories to encourage industrialization. Famous among the early theories formulated are: Leibenstein's theory of critical minimum effort thesis (Leibenstein, 1957); Nelson's theory of low equilibrium trap; Rosenstein-Rodan's theory of the big push (Rosenstein-Rodan, 1943); the doctrine of balance growth; Hirschman's doctrine of unbalance growth (Hirschman, 1958); the import substitution strategy; and export promotion strategy. Over time, the influences of these theories on policy decisions have been varied. To examine the impact of industrialization in Nigeria, the study hypothesizes that industrialization does not stimulate economic growth in Nigeria.

More often than not, people commonly speak or argue that the Nigerian economy has myriad or hydra-headed economic problems. This means that people clearly observe the macroeconomic instability in Nigeria. Despite all efforts, since October 1960 the level of industrialization has remained very low, even with her oil wealth (Uzochukwu, 2008). This has been the situation notwithstanding the varied strategies that have been put to use overtime for its industrialization (Uzochukwu, 2008). Even though the economy was adjudged to be fairly good it, however, fluctuated because the real Gross Domestic Product (RGDP) was unstable (Central Bank of Nigeria, 2011). Also, other economic indicators such as industrial output, foreign direct investment, interest rate, foreign exchange rate and inflation rate show some symptoms of the ailing economy. It is against this background that this research is carried out to find monetary and fiscal policy in Nigeria that is effective in economic growth and stability.

The general objective of the study was the impact of industrialization on economic growth in Nigeria. While the specific objectives include to:

- Investigate the effect of fiscal policy on Gross Domestic Product (GDP)
- Examine the effectiveness of fiscal and monetary policy on economic growth
- To determine the relationship between government spending and industrial development
- To determine the effect of Budget on investment or employment generation

## 2. LITERATURE REVIEW

The theoretical framework used in this study is based on aggregate production function based on an endogenous growth model developed by (Jones & Manuelli, 1990) which avoid diminishing returns to capital. The model is presented as follows  $y = f(k, l)$ ; Where:  $y$  is per capital output;  $k$  is capital industrial output ratio;  $l$  is labour industrial output ratio.

The aggregate production function has constant, average and marginal product of capital and it does not exhibit convergence property (Barro & Sala-i-martin, 2004). The term industrial growth of industrialization has two distinct meanings: it can be conceived as a shift in a country's pattern of output and work force towards manufacturing or secondary industry (Clunies-Ross, Foresyth, & Huq, 2010). It can also be defined in terms of income levels reaching a certain threshold. It is on the basis of this that countries are classified into, low-income; lower middle income, higher middle income, lower, upper income, higher upper income and high-income countries (UN, n.d.). This is a broader dimension of industrialization.

In a work of this nature, it is conventional to use the first definition above. It is against this background that O'Sullivan and Sheffrin (2007) defined industrialization as the process of societal and economic change that transforms a human from agrarian to an industrial one. In their view, industries bring about change in three ways: modernization, the development of large scale energy and metallurgy production. These aspects are closely linked to economic growth. They also assert that industrialization brings with it the sociological process of rationalization.

Economic growth has been conceived as an increase in per capita income over a period of time (Clunies-Ross, Foresyth, & Huq, 2010; Jhingan, 2005; Abbott, 2003) and it is considered that good governance, good legal framework, availability of natural resource, relative low cost skilled labor and technology are key positive factors stimulating industrialization.

Most of the empirical and theoretical arguments in favour of industrialization has been summarized by Bolaky (2011). He posits that there is a positive correlation between the level of industrialisation and per capita income for developing countries. Empirical evidences demonstrate that there is a higher marginal product of labour from the industrial sector than in the agricultural sector and so the transferring of resources for the agricultural sector to the industrial sector raises total productivity in the economy (Olajide, Akinlabi, & Tijani).

There are studies relating to industrialization and economic growth. It has been posited that industrialization through foreign investors can exert a positive effect on economic growth rate (Blomstrom, Lipsey, & Zegan, 1994). They further argued that the industrialization contribution to the economic growth rate is dependent on the threshold level of income. This means that, below the threshold level of income, the contribution of industries to economic growth is not significant and above the threshold, it is significant. This is because it is only countries that have reached a certain income level that can benefit effectively from the packages of those industries and foreign investors. Such packages are new technologies, human capital development and managerial skills. Shafaeddin (2005) analysed economic performance of a sample of developing countries that have undertaken economic reforms since the early 1980s with the objective of expanding exports and diversification in favour of the manufacturing sector.

### 3. MATERIALS AND METHOD

The study was designed with Nigeria as study area. Nigeria is located on the Gulf of Guinea in West Africa and occupies an area of 923,789 square kilometers and is bordered on the east by the Republic of Cameroun, on the west by the Republic of Benin, and on the north by Niger Republic. Nigeria has a population of about 170 million people and is the most populated nation in Africa. It is also one of the major producers of oil in the world; her economy depends on oil, which supplies about 90% of her foreign exchange. Nigeria had her independence on October 1<sup>st</sup>1960. And about 90% of her population reside in the rural areas and engaged in fishing and farming.

#### 3.1 Method of data collection

This research work only utilized secondary data from the 2011 Central Bank of Nigeria Statistical and the National Bureau of Statistics (NBS) of Nigeria.

#### 3.2 Method of data Analysis

The models were specified and ordinary least squares (OLS) regression was used to analyze the models. Estimation of parameters of the models required data on industrial output, foreign direct investment, foreign exchange rate, interest rate and Gross Domestic Product at constant prices. Some criteria such as the coefficient of determination ( $R^2$ ), T-test, F-test and Durbin -Watson (DW) statistics were used. Durbin Watson statistics were used to be able to examine the extent of serial correlation between variables.

#### 3.3 Model specification

$$RGDP = F(X_1, X_2, X_3, X_4) + U_t$$

Where:

RGDP is the Real Gross Domestic Product (Y);  $X_1$  is the Manufacture output (MO);  $X_2$  is the Foreign Direct Investment (FDI);  $X_3$  is the Foreign Exchange rate (FER);  $X_4$  is the Inflation rate (IR);  $X_5$  is the Bank Interest rate (BIR); and  $U_t$  is Stochastic (error) variable

#### Model 1

$$RGDP = 2.076 + 0.904MO + 0.045FDI - 0.047EXR + 0.005BIR - 0.021IR + U_t$$

(10.396) (14.962) (2.643) (-0.418) (0.056) (-1.025)

T-statistics are in parenthesized

$R^2 = 0.997$  Adjusted  $R^2 = 0.995$

F-Statistics = 599.02 D-W = 1.61

The Model 1 above equation shows that manufacturing output increase RGDP by 0.9 magnitudes, FDI increase RGDP by 0.045 magnitudes, interest rate increase RGDP by 0.005 magnitudes while the increase in exchange rate decrease RGDP by -0.047 which has a negative relationship with RGDP and the increase in inflation also decreases RGDP by -0.021 magnitude. From the model above, the result indicates that  $R^2$  is 0.99. This shows that over 99 percent of the variation in RGDP growth is explained by the five independent variables taken together. The coefficient of manufacturing output, FDI and interest rate are rightly signed (that is, positive) and significant at the 5 % level of significance. This shows that the growth of manufacturing output, FDI and interest rate have a positive effect on the growth of the economy while exchange rate and inflation rate are negatively signed that is the exchange and inflation rate by eroding the purchasing power of the people.

Model 2

$$RGDP_t = 2.01 + 0.89RGDP_{t-1} - 0.003MO - 0.05FDI + 0.01EXR + 0.01BIR - 0.02BIR - 0.003IR + U_t$$

T-statistics are in parentheses

$$R^2 = 0.998 \quad \text{Adjusted } R^2 = 0.996$$

$$F\text{-Statistics} = 548.83 \quad D\text{-W} = 1.89$$

The Model 2 above when independent variable was lagged by previous year as shown in the equation above manufacturing output decreases RGDP by 0.003 magnitude, FDI increase RGDP by 0.045 magnitude, interest rate increase RGDP by 0.02 magnitude while the increase in exchange rate decrease RGDP by -0.01 which has a negative relationship with RGDP and increase in inflation also decreases real Gross Domestic Product by -0.003 magnitude.

From the model above, the result indicates that  $R^2$  is 0.99. This shows that over 99 percent of the variation in RGDP growth is explained by the five independent variables taken together. The coefficient of manufacturing output, FDI are rightly signed in the long run (that is negative) and significant at the 5 % level of significance. This shows that the growth of manufacturing output, FDI and interest rate have a positive effect on the growth of the economy while exchange rate and inflation rate are negatively signed, that is exchange and inflation rate by eroding the purchasing power of the people.

## 4. RESULT AND DISCUSSION

Tables 1, 2, 3 and appendix 1, 2 show the various values of both dependent and independent variables. It shows GDP at constant prices, manufacturing output, FDI, exchange rate, interest rate and inflation.

Table 1: Regression Data

Year	Real Gross Domestic Product (=N= Million)	Manufacturing Output (=N= Million)	Foreign Direct Investment (Million US \$)	Exchange rate	Interest rate	Inflation rate
2000	412,332.01	14,204.73	1,140.14	109.55	21.55	14.53
2001	431,783.18	15,191.30	1,190.63	112.49	21.34	16.49
2002	451,785.67	16,723.71	1,874.04	126.40	22.47	12.14
2003	495,007.17	17,669.80	2,005.39	135.41	22.47	23.84
2004	527,576.03	19,436.78	1,874.03	132.67	20.62	10.01
2005	561,931.39	21,305.05	4,982.53	130.40	17.61	11.57
2006	595,821.61	23,305.87	4,854.42	128.27	17.95	8.57
2007	634,251.14	25,535.50	6,034.97	117.97	17.26	6.56
2008	672,202.55	27,806.76	8,196.61	130.75	17.06	15.05
2009	718,977.33	29,990.92	8,554.84	146.47	16.94	12.14
2010	776,332.21	32,260.63	6,048.56	148.46	15.14	12.10
2011	834,000.83	34,680.54	8,841.95	153.86	18.36	10.80
2012	888,893.00	37,300.44	7,101.03	159.47	17.59	12.90
2013	950,114.03	40,211.59	5,609.00	155.79	17.02	8.84

Source: National Bureau of Statistics and Central Bank of Nigeria Statistical bulletin

Table 2: Log of Regression Data

Year	Log of RGDP	Log of Manufacturing output	Log of Foreign Direct Investment	Log of Exchange rate	Log of Interest rate	Log of Inflation rate
2000	5.62	4.15	3.06	2.04	1.33	1.16
2001	5.64	4.18	3.08	2.05	1.33	1.22
2002	5.65	4.22	3.27	2.10	1.35	1.08
2003	5.69	4.25	3.30	2.13	1.35	1.38
2004	5.72	4.29	3.27	2.12	1.31	1.00
2005	5.75	4.33	3.70	2.12	1.25	1.06
2006	5.78	4.37	3.69	2.11	1.25	0.93
2007	5.80	4.41	3.78	2.07	1.24	0.82
2008	5.83	4.44	3.91	2.12	1.23	1.18
2009	5.86	4.48	3.93	2.17	1.23	1.08
2010	5.89	4.51	3.78	2.17	1.18	1.08
2011	5.92	4.54	3.95	2.19	1.26	1.03
2012	5.95	4.57	3.85	2.20	1.25	1.11
2013	5.98	4.60	3.75	2.19254	1.23	0.95

Source: Researcher’s own computation

Table 3: Unit Root Results (Unit Root Test (Stationary))

Variables	Level	5% Critical Value	Status
Real Gross Domestic Product	-7.055602	-3.1801**	1(1)
Manufacturing Output	-8.178746	-3.1801**	0(2)
Foreign direct investment	-5.899732	-3.2195**	2(1)
Foreign Exchange	-5.899732	-3.2195**	1(1)
Bank Interest rate	-3.964134	-3.2195**	2(1)
Inflation rate	-3.314368	-3.2195**	2(1)

\*\* Levels of Significant at 5% 10% respectively

## 5. SUMMARY OF THE REGRESSION RESULT

### Model

$$\begin{aligned}
 \text{RGDP} &= 2.076 + 0.904\text{MO} + 0.045\text{FDI} - 0.047\text{EXR} + 0.005\text{BIR} - 0.021\text{IR} + U_t \\
 &(10.396) \quad (14.962) \quad (2.643) \quad (-0.418) \quad (0.056) \quad (-1.025) \\
 \text{RGDP}_t &= 2.01 + 0.89\text{RGDP}_{t-1} - 0.03\text{MO} - 0.05\text{FDI} + 0.01\text{EXR} + 0.01\text{BIR} - 0.02\text{BIR} \\
 &\quad - 0.003\text{IR} + U_t
 \end{aligned}$$

### Test of goodness of fit (R<sup>2</sup>)

The coefficient of determination (R<sup>2</sup>) in the model shows that the model was significant (R<sup>2</sup>=0.997 or 99.7%) this shows that 99.7% of the variation in the dependent variable that is real GDP was explained by the various independent variables. 0.003 or 0.3% was not explained due to extraneous factors, not captured in the model above.

### F-statistics

At 5% of significance, the model above showed that there was significant relationship between real GDP and manufacturing output, Foreign Direct Investment, Exchange rate, interest rate and inflation since F-test = T-cal (599.02) > T-tab (3.14) this re-confirmed the value of R<sup>2</sup> = 99% which was significant. This is because the f-cal (599.02) > f-tab (3.14) at the 5% level of significance.

## 6. CONCLUSION AND RECOMMENDATIONS

This work focused on the impact of industrialization on economic growth and stability in Nigeria (2000-2013) essentially, some macroeconomic indicators such as RGDP is the dependent variable while manufacturing output, FDI, exchange rate, interest rate and inflation are independent variables. The conclusion emerging from this study is that in general, industrialization has a negative impact on economic growth in Nigeria. This implies that good policy measures should be put in place to improve human capital development so as to make people capable of using modern technology and to diffuse it in the industrial output thereby improving the overall productivity of all the sectors and ensure sustainable development. The government should create a good environment for industrial growth through:

- a) Provision of good governance mechanism and a good legal framework to protect property rights
- b) Improvement of the judiciary and the security system to minimize the crime rate and terrorism in the country
- c) Improve on social and economic infrastructure, especially electricity supply, the transportation system and good functional education. This can reduce the cost of production, improve the diffusion of technology and make Nigerian manufacturers more competitive
- d) Improved industrial policy and
- e) Creating an enabling environment for investment
- f) Put measures in place to ensure local sales and also export of manufactured products.

## REFERENCES

- Abbott, L. (2003). *Theories of Industrialisation and Enterprise Development*. London: Good Book.
- Amakom, U. (2008). Post Independence Nigeria and Industrialisation Strategies: Four and Half Erratic Decades. 1-18. Retrieved December 20, 2015, from <http://ssrn.com/abstract=1266633>
- Barro, R., & Sala-i-martin, X. (2004). *Economic Growth*. New Delhi: Prentice-Hall.
- Blomstrom, M., Lipsey, R., & Zegan, M. (1994). What Explains Developing Countries Growth? *NBER Working Paper*, 4132.
- Bolaky, B. (2011). The Role of Industrialisation in Economic Development: Theory and Evidence. (p. 52). UNCTAD.
- Central Bank of Nigeria. (2011, December). *Statistical Bulletin*. Retrieved from [http://www.cenbank.org/out/2012/ccd/2011%20statistical%20bulletin%20table%20of%20content\\_finalweb.pdf](http://www.cenbank.org/out/2012/ccd/2011%20statistical%20bulletin%20table%20of%20content_finalweb.pdf)
- Clunies-Ross, A., Foresyth, O., & Huq, M. (2010). *Development Economics*. London: McGraw Hill.
- Djeudo, A. (2013). *The National Cake: To Bake or to Share?*. Bloomington: AuthorHouse.
- Hirschman, A. (1958). *Strategy of Economic Development*. New Heaven, Conn.: Yale University.
- Iwuagwu, O. (2011). The Cluster Concept: Will Nigeria's New Industrial Development Strategy Jumpstart the Country's Industrial Takeoff? *Afro Asian Journal of Social Science*, Vol. 2 (No. 2.4), 1-24. Retrieved November 24, 2015, from <http://www.onlineresearchjournals.com/aajoss/art/75.pdf>
- Jhingan, M. (2005). *Economics of Development and Planning*. Delhi: Vrinda Publications.
- Jones, L., & Manuelli, R. (1990). A Convex Model of Equilibrium Growth: Theory and Policy Implications. *Journal of Political Economy*, 1008-1038.
- Leibensein, H. (1957). *Economic Backwardness and Economic Growth*. New York: Wiley.
- Olajide, O., Akinlabi, B. H., & Tijani, A. A. (n.d.). Agriculture Resource and Economic Growth in Nigeria. *European Scientific Journal*, 8(22), 103-115. Retrieved January 11, 2016, from <http://eujournal.org/index.php/esj/article/viewFile/422/570>
- Olowookere, E. (n.d.). Organisational Citizenship Behaviours (OCB): A Key to Industrial Development in Nigeria. 1-13. Retrieved November 22, 2015, from <http://eprints.covenantuniversity.edu.ng/3306/1/Publication%203.pdf>
- O'Sullivan, A., & Sheffrin, S. (2007). *Economics: Principles in Action*. New Jersey : Prentice Hall.
- Rosenstein-Rodan, P. (1943). Problems of Industrialisation in Eastern and Southern Term Europe. *Economic Journal*.
- Shafaeddin, M. (2005, April). Trade Liberalisation and Economic Reforms in Developing Countries: Structural Change or De-industrialisation? *UNCTAD Discussion Paper*, p. 23. Retrieved December 12, 2015, from [http://unctad.org/en/docs/osgdp20053\\_en.pdf](http://unctad.org/en/docs/osgdp20053_en.pdf)
- UN. (n.d.). *Country Classification*. Retrieved November 25, 2015, from [http://www.un.org/en/development/desa/policy/wesp/wesp\\_current/2014wesp\\_country\\_classification.pdf](http://www.un.org/en/development/desa/policy/wesp/wesp_current/2014wesp_country_classification.pdf)
- Uzochukwu, A. (2008). *Post Independence Nigeria and Industrialisation Strategies: Four and Half Erratic Decades*. Retrieved from [www.ssrn.com/abstract=1266633](http://www.ssrn.com/abstract=1266633)



APPENDICES

Appendix 1: Regression Result

$$RGDP_t = 2.076 + 0.904MO + 0.045FDI - 0.047EXR + 0.005BIR - 0.021IR + U_t$$

Dependent Variable: RGDP

Method: Least Squares

Date: 01/26/16 Time: 16:45

Sample: 2000 2013

Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MO	0.903966	0.060414	14.96295	0.0000
FDI	0.045450	0.017196	2.643114	0.0296
EXR	-0.046570	0.111289	-0.418461	0.6866
BIR	0.005350	0.093871	0.056995	0.9559
IR	-0.021352	0.020813	-1.025895	0.3350
C	2.076996	0.199782	10.39630	0.0000
R-squared	0.997336	Mean dependent var	5.791429	
Adjusted R-squared	0.995671	S.D. dependent var	0.118572	
S.E. of regression	0.007801	Akaike info criterion	-6.571517	
Sum squared resid	0.000487	Schwarz criterion	-6.297635	
Log likelihood	52.00062	F-statistic	599.0212	
Durbin-Watson stat	1.609871	Prob(F-statistic)	0.000000	

Source: Eviews 7.0

Appendix 2: Regression Result

$$RGDP_t = 2.01 + 0.89RGDP_{t-1} - 0.03MO - 0.05FDI + 0.01EXR + 0.01BIR - 0.02BIR - 0.003IR + U_t$$

*Dependent Variable: RGDP*

Method: Least Squares

Date: 01/29/16 Time: 11:19

Sample: 2000 2013

Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDPT	0.895252	0.057998	15.43579	0.0000
MO	-0.038973	0.017103	-2.278668	0.0567
FDI	-0.009523	0.109714	-0.086797	0.9333
EXR	0.006409	0.089979	0.071223	0.9452
BIR	0.017464	0.020066	0.870294	0.4130
IR	-0.003027	0.002262	-1.338264	0.2226
C	2.014594	0.196204	10.26785	0.0000
R-squared	0.997879	Mean dependent var	5.791429	
Adjusted R-squared	0.996061	S.D. dependent var	0.118572	
S.E. of regression	0.007442	Akaike info criterion	-6.656473	
Sum squared resid	0.000388	Schwarz criterion	-6.336944	
Log likelihood	53.59531	F-statistic	548.8366	
Durbin-Watson stat	1.889895	Prob(F-statistic)	0.000000	

© 2010-2016

*Sacha & Diamond Academic Publishers, Meridian Centre,  
258 Kingsland Road, Hackney, London E8 4DG, England, United Kingdom.  
In Compliance with the Standards Approved by the UK Arts and Humanities Research Council  
Abstracting and Indexing in:*

*GIGA - The Electronic Journals Library of the German Institute of Global and Area  
Studies, Information Centre, Hamburg; Google Scholar; Global Development  
Network (GDNNet); Social Science Research Network (SSRN); Econlit - The American  
Economic Association's Index; EBSCO; IndexCopernicus USA; British International  
Libraries; Anton's Weekly Digest;  
Econlit (USA); International Abstracts in Operations Research; Environmental  
Science and Pollution Management; Research Alert*

*For the Advancement of Knowledge to the World. www.sachajournals.com*