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Industrialization Drivers and Nigeria Economic Growth



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ABSTRACT

This paper sets out to empirically investigate potent industrialization drivers and Nigeria economic growth between the periods 1980 to 2014 using time series data. The study employed Unit Root Test, Co-integration Test, Error Correction model and Granger Causality Test in ascertaining the objectives of the research. Findings revealed that Foreign Direct Investment (FDI), Financial System Development which is proxy with Aggregate Bank Lending (ABL) and Exchange Rate (EXR) significantly stimulate the Nigeria economy while Trade Openness negatively influences economic growth in the long run. We conclude based on our findings that Foreign Direct Investment, Aggregate Bank Lending and Exchange Rate are key determinants of industrialization that helps to achieve the sustainable level of industrial development and hence promote economic growth. Hence, we recommend creation of favourable economic environment to encourage more inflows of foreign investment and more administrative sweeteners like low operation costs, low tariffs be put in place to further encourage foreign investors as these will help in stimulating industrialization and hence promote growth in the Nigeria economy.



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1.0 INTRODUCTION

In Nigeria, industrial policies are not linear but rather curve linear, starting from import substitution strategy in the 1960's, moving to a combination of the latter one with an export substitution approach in the 1970's and 1980's before choosing a market oriented strategy in the 1990's. The results were disappointing given that the changes from one strategy to another was not translated by an economic transformation and then by an industrial take-off of the continent.

Obviously, despite the gap of industrial performances between Africa and the other emerging countries, industrial development seems to be given less weight than deserved in Nigeria. Most political leaders have indeed underestimated the real potential of industrialization for the continent.

Industrialization has been identified as a sure strategy for developing an economy. It involves the establishment of industries and factories which turn raw materials or semi processed products into finished goods. Economic growth in most African countries is on a positive trajectory, and the global perception of the continent has evolved to that of sheer optimism. Concurrently, economic management is becoming prudent, a middle class is emerging, and social indicators are rapidly improving. Empirical findings reveals that overdependence of commodity exports exposes an economy to volatility in international prices, dwindling prospects for long term growth, hence, external shocks are normally beyond the control of most countries and they are disastrous. Establishing a vibrant manufacturing sector is a powerful engine of growth and development. In fact, virtually all developed countries are industrialised. This implies that they have reallocated their physical, human and financial resources towards more productive sectors such as manufacturing. Hence, Nigeria economy will need to follow suit.

There are several benefits which accrue through industrialization. One, the sector creates quality and better paying jobs, and can thus translate into a substantial source of income for the country's rapidly growing population. Due to linkage development, job opportunities also emerge in other sectors. This is vital, as it will help in reducing ever teaming unemployment rate in Nigeria. Creating jobs is therefore imperative, and industrialization provides a practical channel to attain this. Second, income in manufacturing is higher and relatively stable, a noble opportunity to alleviate poverty. In addition, given the labour intensive nature

of the sector, higher wages and salaries accrue to a larger population, reducing income inequality. It can even get better. These income effects are normally pronounced in rural areas, where natural resource deposits and mines are mostly located, acting as a tool to promote inclusive development. Third, industrialization results into significant capital accumulation which enhances economic productivity. In other words, investments, both domestic and foreign are bound to increase, and this enhances efficiency in production processes. Countries, as well as consumers, benefit from better quality goods. At the same time, foreign investment improves the prospects for innovation and technology transfer, enabling a country to embrace modern technological systems.

Accordingly, the level of industrialization in Nigeria is insignificant as large percentages of the existing industries are closing down due to economic, political and exchange rate instability. Poor industrialization setup in Nigeria culminated to high level of unemployment, over dependence on imported commodity, recycling level of poverty, unfavourable terms of trade, unfavourable balance of payments, and exchange rate instability and hence stamped expected level of economic development overtime. Sequel to this, it is high time that the Nigerian authority rise to embrace industrialization as it is a key stimulus to sustainable economic development. Schumpeter articulated that one of the major impediments to sustainable industrialization is inadequate access to finance (fund). Hence to ensure a sporadic growth of industries, financial institution plays a paramount role. Financial institution is seen as the pre-requisite to achieving successive industrialization as they help in making readily available loans and advances for production purposes. In the gap thesis, the critics assert that speedy industrial development can be achieved through the existence of developed financial system.

The Big-push theory of(1) asserts that before underdeveloped countries could enjoy or achieve a sustainable level of development, large quantum of investment (industrialization) is required. The theory explains that one of the major problems faced by the under-developed countries is vicious circle of poverty which emanates from low productive output, low level of income, low level of investment and finally amount to high level of unemployment. The theory proposes that bit by bit industrialization program in the preferred sector of the economy will not help in achieving the expected level of growth. Hence, massive industrialization in the economy is essential.(2) and (3) contend that speedy industrial development could be achieved through the operation of the financial system as it

resuscitates the mobilization of a fund for production. Conversely, (4) contend that economic development establishes a demand for specific type of financial arrangement and that financial system respond automatically to economic growth. Researchers like (5), (6), and (7) adopted a Unified growth model as the panacea for industrial development. The studies argue that, industrialization is an emerging product of the interaction between population, education growth and technological change where skilled labour is largely demanded in the technological and manufacturing sectors. The model explains the take-off of an economy and the transition from an agricultural oriented economy to industrial economy.

(5) Analysed the transition using the interaction between availability of technology, population growth and incentive to invest in education. According to the model, the demand for educated worker was increased in the Malthusian period due to initial establishment of industrial production who has an incentive to invest more in the formation of human capital and reducing fertility. Increase in productivity became large than increase in population due to change in education which stimulate the growth process. Hence, the initial difference in technological progress can then be explained by a number of factors such as property right, enlightenment, application of knowledge etc. Currently, different pattern of change in human capital can be explained by institution, access to finance, inequalities and so on.

The Asian tigers like Korea, Hong Kong, Singapore, Taiwan and China employed industrialization strategy which gives room for large market and hence stimulate demand which further encourage large scale industrialization. However, trade liberalization is another key player in achieving a promising level of economic growth in any country as it allows for free access to imported materials at an equivalent free trade price, access to capital and technology as well has more competitive exchange rate which act as a stimuli to industrial growth. (8) Points that the level of industrialization in Nigeria is insignificant as large percentage of the existing industries are closing down due to economic, political and exchange rate instability. The crowding out effect of industries from the Nigeria economy due to economic instability is a major impediment to economic development and hence deepens the level of poverty. (9) Asserts that trade liberalization is corrosive to economic growth of countries that have not embarked on protective policies, especially the low income earning countries and hence may debar industrialization. That the increased vulnerability of the economy is the major determinant of industrialization particularly the manufacturing sector that is import dependency and not trade liberalization.

Empirical studies have shown that to achieve a sustainable level of development, industrialization plays a lead role. Series of empirical studies have been carried out on the determinants of industrialization and economic growth in the western world while quite a number of results emerge. In the Nigeria context however, there exist few empirical contributions to the effect of industrialization on economic growth. (10) Examined the inter-relationship between various determinants of industrialization and their effects on economic performance of 35 African countries using panel data between the periods 1970 to 2012. The study employed descriptive statistics and Arellano-Bond autocorrelation test to ensure fitness of the model. Their study reveals that corporate governance, exportation, economic output, finance, and trade liberalization are the major drivers of industrialization and that they contribute significantly to the development of the LDC's overtime. The study further reports that FDI and Real exchange rate does not statistically and significantly stimulate economic growth.(11)Reviewed literature that studied the relationship between foreign direct investment, productivity and growth using aggregate data. They conclude that the plethora of studies fails to yield a consensus on whether foreign direct investment is beneficial or harmful for economic growth. Despite widespread claim in the policy literature about positive spill-over from foreign direct investment to the economy, the empirical evidence is mixed. Using data on foreign direct investment inflows from advanced economies of 69 emerging markets during 1970 to 1989, (12)articulated that trade liberalization is a good strategy to promote industrialization and hence stimulate economic growth. The study further explains that trade liberalization trigger inflows of foreign assistance, the technological advancementwhich stimulate productivity output and hence, promote size of domestic market thereby giving room for the balance of trade and exchange rate stability. (13) Asserts that foreign capital inflow help in promoting economic development as it complement domestic resources and supplement domestic saving. The study articulated that there exist a positive and significant relationship between foreign capital inflow and economic development.

(14) Identified that low exchange rate is an additional advantage which allows export sectors like manufacturing firm to compete in the international market and hence promote balance of payment stability. (15) Evaluated trade openness of the Nigerian economy for the period of 1970 to 2010, using Co-integration, unit root and linear regression analysis (OLS) techniques. They discovered that export, import, and the degree of openness are all positively related to output (proxy by GDP).Which shows that economies grow faster when they are open to international competition.(16) Explored the relationship between trade openness and

economic growth using a sample of 71 developing countries over the period 1990-2005. Incorporating an augmented Solow growth model in a panel data analysis, both fixed and two-way fixed effects specifications indicate that trade liberalisation has a positive and significant effect on economic growth.

(17) Investigated the causality nexus between financial development in Nigeria and economic performance between the periods 1986 to 2014 using time series data. The study employed granger causality test, unit root test and Co-integration test to ascertain the long run nexus that exist among the variables employed. Their finding reveals that there exist a parasitic relationship between finance and economic performance in favour of the economy which suggest that economic growth promote financial sector development. Sequel to this, the study concludes that in the Nigeria context, economy leads while finance follows. (18) Examined the role of trade openness and foreign direct investment in relation to economic growth for Pakistan and Malaysia for the period 1980-2010. Johansen co-integration test was used in estimating the nature of relationship and Granger causality test was used to determine the direction of causality in the model. Results showed that in the long run trade openness positively effects the economic growth in both Pakistan and Malaysia.

(19) Examined the relationship between capital flow and economic growth, using a sample of 100 countries over a time period of 1990 to 2010, their study revealed a complex and mixed picture. The relationship between growth and lagged capital flows depends on the type of flows, economic structure, and global growth patterns. They found a large and robust relationship between Foreign Direct Investment on both inflows and outflows and growth.

According to (20) they examined the impact of exchange rate movement and stock performance on foreign direct investment inflows into Nigeria, adopting Ordinary least square regression model and error correction technique, using time series data between 1980 to 2013, their findings revealed that there exist a balance framework between exchange rate volatility and returns, capital flows and equity returns.(21) Examined the “influence of exchange rate movement on foreign direct investment in Pakistan between the periods of 1980 to 2011”. Their study used ordinary least square regression (OLS) model along with diagnostic analysis. They established that exchange rate shocks and inflation rate avert foreign direct investment while a positive correlation exists between exchange rate and FDI. (22) Studied the impact of trade liberalization on foreign direct investment in Pakistan using quarterly data from 1972 to 2010. The findings suggest that there is a significant positive

relation between trade liberalization and FDI. The results indicate that the factors that drive foreign investment have a differential impact on FDI flows to Pakistan.

The crowding out of industries from the Nigeria economy is a major impediment to economic growth and hence deepens the level of poverty overtime. On this premise, it is essential to re-strategize and put in place measures that will help to encourage industrialization in the country. It is on this back drop that this study examined industrialization drivers and the Nigeria economic growth. The eclectic objective of this study is to investigate the key determinants of industrialization and their effects on the growth of the Nigeria economy. The remaining part of this paper is split into three sections. Section two handles the research methodology and materials. Section three takes care of presentation and discussion of results while section four captures conclusion and recommendations.

2.0 METHODOLOGY

2.1 Model Specification

Following the empirical lead of (10), we formulate our model in a functional form thus where foreign direct investment, trade openness, financial system development, effective exchange rate and real gross domestic product as proxy for the Nigeria economic growth.

$$RGDP = f(FDI, TOP, ABL, EXR) \dots\dots\dots(1)$$

This model is further transformed into econometric model by introducing intercept, slope and error term thus:

$$RGDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 TOP_t + \beta_3 ABL_t + \beta_4 EXR_t + \epsilon_t \dots\dots\dots(2)$$

To avoid outliers and extremes, we linearize this model by introducing natural log thus:

$$\ln RGDP_t = \beta_0 + \beta_1 \ln FDI_t + \beta_2 \ln TOP_t + \beta_3 \ln ABL_t + \beta_4 \ln EXR_t + \epsilon_t \dots\dots\dots(3)$$

Where;

RGDP = Real gross domestic product

FDI = Foreign direct investment

ABL = Aggregate bank lending

TOP = Trade openness

EXR = Exchange rate

β_0 = intercept

$\beta_1 - \beta_4$ = slope

Ln = natural log

ε = error term

Apriori Expectation

Based on theories and empirical studies, we expect that the predictor variable has a positive nexus with the dependent variable and it is mathematically stated thus:

$\beta_1, \beta_2, \beta_3$ and $\beta_4 > 0$

2.2 Sources of Data

This study utilized annual time-series data from 1980 - 2014 for estimation of the functions. Data were collected from various issues of Central Bank of Nigeria Statistical Bulletin, United Nations Conference on Trade and Development (UNCTAD) Publications, and World Bank Data Base.

3.0 Presentation and discussion of results

3.1 Unit Root Test Results:

The results of the unit root tests of the variables are presented in Table 1 below:

Table 1: Results of Stationarity (Unit Root) test:

Variables	PP Stat.	5%critical value	Order	Remark
D(RGDP)	-4.0110	-2.9540	1(1)	stationary
D(FDI)	-10.2030	-2.9540	1(1)	stationary
D(ABL)	-2.9604	-2.3633	1(1)	Stationary
D(TOP)	-7.7724	-2.9540	1(1)	stationary
D(EXR)	-5.4779	-2.9540	1(1)	stationary

Source: Authors’ estimation using E-views 9

The results of unit root test in Table 1 above, show that all the variables are stationary at their first difference (1), as the absolute values of their PP test statistic are all higher than their respective MacKinnon’s critical values at 5% hence we proceeded to test for long run relationship using Johansen co-integration test.

Table 2: Presentation of co-integration test result

Hypothesized	Eigenvalue	Trace stat.	0.05 Critical Value	Prob.
No. of CE(s)				
None *	0.969359	195.8335	69.81889	0.000
At most 1*	0.843527	80.81486	47.85613	0.000
At most 2	0.3232779	19.60407	29.79707	0.0450
At most 3	0.181962	6.693301	15.49471	0.6135
At most 4	0.003076	0.101671	3.841466	0.7498

Source: Authors’ estimation using E-views 9

In Table 2 above, we observe the existence of at least two co-integrating equations judging by their ranking order and the trace statistic being greater than the critical value at 5% level of significance. This suggests the existence of long-run relationship between some of the

variables employed and that some of the variables may share mutual stochastic trend in the long-run.

Table 3: Presentation of multiple regression results

Dependent Variable: lnRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7546.156	3870.631	1.949593	0.0606
lnFDI	0.031858	0.008066	3.949775	0.0004
lnEXR	85.36502	49.41038	1.727674	0.0943
lnABL	4.613307	0.827905	5.572266	0.0000
lnTOP	-31131.83	12110.30	-2.570690	0.0154
R-squared	0.894772	Mean dependent var	15139.94	
Adjusted R-squared	0.880742	S.D.dependent var	24893.61	
S.E.of regression	8596.701	Akaike info criterion	21.08771	
Sum squared resid	2.22E+09	Schwarz criterion	21.30990	
Log likelihood	-364.0349	Hannan-Quinn criteria	21.16441	
F-statistic	63.77399	Durbin-Watson stat	1.383541	
Prob(F-statistic)	0.000000			

Source: Authors' estimation using E-views 9

From the output above, we found that the adjusted R² stood at 0.880742 which suggest that about 88% variation in endogenous variable is captured and explained by the exogenous variable while the remaining 12% is captured by the error term. The Durbin Watson statistic value stood at 1.383541 which suggests presence of autocorrelation.

From the relative statistics, we found that FDI maintains a positive and significant P-value of (0.0004) which implies that foreign direct investment statistically and significantly promote the Nigerian economy suggesting a potent determinant of industrialisation. Financial system which was proxy by ABL possesses a positive and significant relationship to the Nigeria economy with the P-value of (0.0000) which suggest that financial system is a key paramount industrialisation drivers, exchange rate possess a positive but insignificant nexus to economic growth between the period under study while trade openness maintain a significant but negative relationship to economic growth (0.0154/ -31131). The negativity output of trade openness validate the opinion of (9) who exert that trade liberalisation is corrosive to economic growth of the countries who has not embarked on a precaution protective policies especially the low income earning countries and hence debar industrialization.

Table4: Presentation of parsimonious error correction model

Dependent Variable: lnRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10186.33	3946.015	2.581423	0.0154
lnFDI	0.016552	0.009944	1.664616	0.1071
lnEXR	120.4696	48.81118	2.468075	0.0200
lnABL	4.881927	0.788337	6.192690	0.0000
lnTOP	-39786.30	12120.31	-3.282614	0.0028
<u>ECM(-1)</u>	<u>0.525405</u>	<u>0.224584</u>	<u>2.339462</u>	<u>0.0267</u>
R-squared	0.911871	Mean dependent Var	15582.51	
Adjusted R-squared	0.896134	S. D. dependent Var	25127.82	
S. E. of regression	8098.257	Akaike info criterion	20.99547	
Sum squared resid	1.84E+09	Schwarz criterion	21.26483	
Log likelihood	-350.9230	Hannan-Quinn criteria	21.08733	

F-statistic	57.94338	Durbin-Watson stat.	1.755608
Prob(F-statistic)	0.000000		

Source: Authors' estimation using E-views 9

Error correction model is employed to ascertain the speed at which disequilibrium in the short run is adjusted and corrected in the long run. From the output of the estimation, we found that the adjusted R^2 stood at 0.896134 suggesting that 89% variation in the dependent variable is captured and explained by the independent variables. The Durbin-Watson statistic maintain a P-value of 1.755608 which falls between the acceptable range, hence, it project absence of autocorrelation while the prob(F-statistic) value of 0.000000 show the fitness of the model.

In the long run, we found that FDI maintains a positive (0.1071) but insignificant relationship to the Nigeria economy. This suggest that foreign direct investment seem not to contribute significantly to the growth of the Nigeria economy in the long run, however, EXR possesses a positive (0.0200) and significant relationship to economic growth which suggest that exchange rate stability is a key driver of industrialization in the long run, financial system development which was proxy by aggregate bank lending (ABL) maintains a positive and significant p-value of 0.0000 nexus to the Nigeria economy while trade openness is significant but negatively correlate to economic growth in the long run. The error correction model (ECM) is negative and significant as expected, this suggest that the disequilibrium in the short run is corrected and adjusted to the tune of 0.525405 unit in the long run.

Table 5: Presentation of Granger Causality Test

Pairwise Granger Causality Tests(lags: 2)

<u>Null Hypothesis:</u>	<u>Obs</u>	<u>F-statistic</u>	<u>Prob.</u>
FDI does not Granger cause RGDP	33	0.05743	0.9443
RGDP does not Granger cause FDI		24.6486	7.E-07
EXR does not Granger cause RGDP	33	3.12137	0.0497
RGDP does not Granger cause EXR		0.04084	0.9600
ABL does not Granger cause RGDP	33	54.6917	2.E-10
RGDP does not Granger cause ABL		10.7810	0.0003
TOP does not Granger cause RGDP	33	1.69421	0.2020
<u>RGDP does not Granger cause TOP</u>		<u>1.02655</u>	<u>0.3713</u>

Source: Authors' estimation using E-views 9

From the result presented above judging by 5% alpha value, we observe a unilateral relationship between RGDP and EDI with causality flowing from RGDP to FDI which suggest that RGDP Granger cause FDI hence, we reject null hypothesis. In the same vein, there exist a unilateral relationship between EXR and RGDP with causality flowing from EXR to RGDP suggesting the exchange rate stimulate economic growth and finally we found a bidirectional relationship between ABL and RGDP with causality flowing from both directions. This suggest that financial system promote economic growth and also economic growth determines financial system development hence there exist a symbiotic relationship.

4.0 CONCLUSION AND RECOMMENDATIONS

This study empirically examined industrialization drivers and the Nigeria economy using secondary time series data between the periods 1980 to 2014. Time series employed in this research work became stationary at first differencing in the order of 1(1) integration, the result of the co-integration test reveal the existence of long run relationship between the

variables examined in the process of research, the output of the multiple regression reveals that foreign direct investment and aggregate bank lending significantly stimulate the Nigeria economy while trade openness is negatively significant to the Nigeria economy. This suggests that 1% increase in trade openness is capable of downsizing economic growth to the tune of 31131.83 units. The findings is in consonant with the empirical result of (9) who assert that trade liberalization is corrosive to economic growth of the countries who have not embarked on a precaution protective policies especially the low income earning countries and hence debar industrialization.

The result of the error correction model validate the result of the multiple regression and pointed out that in the long run, foreign direct investment does not seem to stimulate economic growth while exchange rate (EXR), aggregate bank lending (ABL) and trade openness (TOP) statistically promote economic growth in the long run. Our findings further reveals that the disequilibrium in the short run is corrected and adjusted in the long run to the tune of 0.525405 unit.

The output of the Granger Causality test reveals the existence of unilateral relationship between RGDP and FDI with causality flowing from RGDP to FDI which suggest that RGDP granger cause FDI hence, we reject null hypothesis. In the same vein, there exist a unilateral relationship between EXR and RGDP. With causality flowing from EXR to RGDP suggests the exchange rate stimulate economic growth. Finally we found a bidirectional relationship between ABL and RGDP with causality flowing from both directions. This suggest that financial system promote economic growth and also economic growth determines financial system development hence there exist a symbiotic relationship. We conclude that foreign direct investment, financial system development which was proxy with aggregate bank lending, exchange rate and trade openness are key drivers of industrialization in Nigeria.

Based on our findings, study recommend thus; since the result of the multiple regression report a significant relationship between foreign direct investment and economic growth, we recommend that favourable economic environment be created to encourage more inflows of foreign investment and more administrative sweetener like low operation cost, low tariff and so on should be put in place to further encourage foreign investors as this will help in stimulating industrialization and hence promote growth in the Nigeria economy.

The result of the error correction model reveals that financial system development significantly promote growth in the Nigeria economy. Based this, we recommend that more loans and advances should be allocated in large percentage to the manufacturing sector of the economy as empirical evidence has shown that countries that concentrate more on manufacturing exportation are more likely to enjoy industrial development in the long run while countries that focus on agriculture will only enjoy population o

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