THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

An Analysis of the Industrial Sector of Nigeria in This Era of Globalization

Eke Orji Kingdom
Professor, Department of History and Diplomatic Studies,
Ignatius Ajuru University of Education, Rivers State, Nigeria
Worika Ibibia Lucky
Professor, Department of Private Law, University of Port Harcourt, Rivers State, Nigeria
Umofia Nsikan
Student, Institute of International Trade and Development,
University of Port Harcourt, Rivers State, Nigeria

Abstract:
The significance of the industrial sector is undeniable in any economy, and therefore, its development and survival is expedient to economic growth and development. This study tries to examine the industrial sector of Nigeria in a globalized world. Ordinary Least Square of regression analysis was used to examine the impact of globalization on the industrial sector of Nigeria using time series data spanning from 1981-2015, with economic openness as a proxy to globalization and industry value added as a measure of industrial sector performance. The period under study was sectioned into two, 1981-1994 (the period under which Nigeria's degree of openness was as low as 0-1) and 1995-2015 (when the degree of openness drastically increased and remained at a high range between 4 and 31). Regression results revealed a positive but insignificant impact exerted by economic openness on industry value added, in both sessions under review. The study recommended that industrial policy measure must be put in place and properly executed, the education system needs to be more technical and practical towards the generation of well educated citizens with appreciable technical know-how to promote innovation, elevate our technological base, and help the nation keep up with global trends in order to benefit more from globalization.

Keywords: *Industrialization, globalization, trade openness*

1. Introduction

Most developing nations, especially after the colonial era have endeavoured to achieve sustainable development through a number of development schemes ranging from trade policies, to industrial policies, to general socio-economic policies for structural adjustment in the economies. And these struggles all have a strong connection with globalization and the importance of trade and investment, as well as development finance.

Prior to the 20^{th} century, global networks that in existence left African states in a vice of anti-development; the process of input substitution and industrialization circled around exports was not producing the results expected.

The industrial sectors of the developing world were mainly characterized by rising production costs as a result of high taxes, inadequate supply of energy accompanied with high energy costs required as production input, poor infrastructure, and high cost of imports due to rising exchange rates. Nigeria ended up being worse off by, considering the steep depreciation of the naira bringing about high exchange rates, and the intense yearning of the Nigerian industrial sector for advanced technology to facilitate production has ever been a factor that cannot be ignored.

The industrial sector of Nigeria cannot be denied a spot amongst the keys in economic development with the presence of an abundant labour force and the economy's agrarian nature. However, agriculture has proven not enough to absorb the growing population in employment, further proving the necessity of industrialization to the economy. Import substitution industrialization strategies, as well as other incentives, were employed to attract foreign investors, but proved abortive resulting in a weak industrial sector. The export promotion scheme was then implemented in the early 1970s, during the oil boom in Nigeria. Since the requirement of advanced technological (and foreign at that) could not be over-emphasized, the industrial sector depended (and still depends) heavily on foreign exchange earnings to support importation of capital equipment.

However, despite the humongous inflows of foreign exchange earnings from the 1970s to the 1990s, courtesy of crude oil sales, adequate provision could still not be made to significantly stimulate the industrial sector of the nation, and this failure was attribute (and obviously) due to the overdependence of the sector on the foreign sector for input supply; and with the fast changing technologies in the world, with trickling effects on product delivery in terms of quality and efficiency, it was difficult for Nigeria as a nation to compete in the global market with any product other than crude oil, and maybe export crops. This brought about a low demand for manufactured products for export, thereby affecting the performance of the industrial sector negatively, despite all the efforts of government to revamp it with policies and incentives. Although, some empirical evidence have shown that there was a positive correlation between local raw material sourcing and profit enhancement in the industrial sector, so one may ask what level of support globalization provided.

2. Brief Literature Review

Very many scholars have contended that globalization has offered opportunities, but not without risks, to developing countries. Akinmulegun and Oluwole (2013), in an assessment of the Nigerian manufacturing sector in the era of globalization, found that globalization had little impact on the manufacturing sector. This went against the apriori expectation that manufacturing production output would rise as globalization strives. Although, it would be naive to assume that there will be no variation in the experiences of the various developing nations in the world concerning the subject matter. While the Asian regions quickly adjusted to globalization and had beneficial results in terms of economic growth, the African regions were not so fortunate. There could (and may most likely) be a connection between this fortune of the African regions with globalization and prevailing factors such as political instability, and high poverty and corruption levels in the region (Akinmulegun, 2011).

Nevertheless, the rising interdependence brought about by globalization has manifested in the trade, capital and investment flows among states of the globe, and it is only expected that this would certainly have far reaching effects on economies due to the inevitable multiplier effect on the participating nation's industrial sector.

Globalization is not a new factor of international relationship. Some scholars have attempted to give some meaning to the concept (Mimiko, 2010, Sheilia 2004) as the inter-connectivity and –dependence, integration, and openness exhibited between nations of the globe. Aluko (2004) affirmed that globalization dates back to the movements of empire and trade across Asia and the Indian Ocean from the fifteenth century. Mimiko and Afolabi (2008) argued in that it may not be adequate to say that globalization is a new occurrence, since the age-long structure this concept has always existed.

Although, Hill (2004) put forward a perception of the idea of globalization, breaking it into globalization of production and of market. He argued that globalization of production was the sourcing of goods and services from regions around the world enjoying the benefits of national differences in the quality and costs of factors of production. The global variations of production capabilities and activities are all pointed towards reducing the cost and structure, while enhancing productivity of firms engaged in global production.

According to predictions of economic theory, nations more open to globalization will enjoy higher rates of economic growth than those with less openness (Sachs and Warner, 1995, Obadan, 2010, Frankel and Romer, 1999).Globalization has hence aided technology flows, and financial and capital flows, thus, making possible a better productive ability for industrialization in nations involved. Another advantage is the exposure to foreign competition, which spurs more efficiency in domestic production, bringing about a struggle for survival in the competitive world of today; though, this could be considered a disadvantage to a developing nation lacking in appreciable productive abilities, or with a weak industrial sector. Scholars such as Hockstra and Chapagain (2008), Steger (2009), Daulaire (2006), and Pimentel and Pimentel (2008) have argued in that line, that globalization also comes with pains. It is quite unfortunate that most developing nations in the African region have not been able to benefit as much as others from being part of a globalized world. Several other authors have conducted researches ad found there to be a positive and significant impact exerted by globalization on industrialization in different countries (Blalock and Gertler, 2008, Damijan et al, 2003, Fosu and Magnus, 2006). In a study of 123 nations of the world in 1970-2000, it was concluded by Dreher (2003) that globalization does indeed promote economic development through enhancement of industrial capacities.

In spite of theoretical evidence abound, empirical studies reviewed have exhibited variations in effects of globalization on the industrial sector of different nations and regions of the world, and at different time intervals, thus it would be naive to assume that the same effect will prevail even in the same region or nation, at different times in history under analysis. Thus, this background begs further study, thereby making this research work necessary, with the Nigerian industrial sector as a case study.

3. Methodology

The method of analysis that was adopted for this study is the ordinary least squares method of regression. It was used because of the nature of the analysis to be done, which was an impact analysis of globalization on the industrial sector of Nigeria using time series data.

The period under review was 1981-2015, and the variables used were mainly Industry value added (% of GDP)(as a measure of industrial performance), and economic openness (as a proxy for globalization). Other variables used were interest rate and gross fixed capital, as economic theory suggests that they too have significant impact on industrial production, however, the variables in high consideration are industryvalue added, and economic openness.

The equation used was expressed in model form as:

IVAG = f(INTR, GFC, EO)

Where, IVAG = Industry Value Added (% of GDP)

EO = Economic Openness

INTR = Interest Rate

GFC = Gross Fixed Capital

This was mathematically written as,

$IVAG_t = a_0 + a_1INTR_t + a_2GFC_t + a_3EO_t + U_t$ ---------------------- (1)

Where, a_0 = intercept of regression line

a_1, a_2, and a_3 = regression coefficients
U_t = disturbant term
t = time (1981-2015)
However, the model used was
$IVAG_t = a_0 + a_1INTR_t + a_2LOG(GFC)_t + a_3LOG(EO)_t + U_t$-------------------------------- (2)
With GFC and EO logged to achieve a better fit.
The period under consideration was also divided into two; 1981-1994, and 1995-2015. The sole aim of doing this was to compare two periods of globalization for Nigeria; the period in which the economy's degree of openness was as low as between 0-1 and, and the period in which it drastically rose to a higher range of 4-31. The same model (equation 2) was used to analyse the effects of globalization on the Nigerian industrial sector in both periods.
Based on apriori expectations, economic openness and gross fixed capital have a positive relationship with industry value added, whereas, interest rate has a negative relationship with industrial production.

3.1. Data Presentation
Table 1 below presents the data for index of industrial production, economic openness, capacity utilization, and exchange rate for Nigeria from 1990-2015.

YEAR	IVAG	EO	GFC	INTR
1981	39.96297	0.095052	2.08E+10	8.916667
1982	35.45213	0.076915	1.53E+10	9.5375
1983	30.87444	0.071213	7.75E+09	9.976667
1984	28.33067	0.071577	3.54E+09	10.24167
1985	29.86	0.074239	3.28E+09	9.433333
1986	27.15992	0.057817	3.25E+09	9.959167
1987	35.30465	0.188371	3.05E+09	13.96167
1988	31.7896	0.191128	2.29E+09	16.61667
1989	43.59742	0.301031	2.85E+09	20.44167
1990	45.27009	0.473527	4.44E+09	25.3
1991	45.7569	0.642103	3.78E+09	20.04167
1992	52.99716	1.034019	3.75E+09	24.75833
1993	42.68733	1.122202	2.15E+09	31.65
1994	32.85864	1.068417	2.03E+09	20.48333
1995	46.01588	4.837111	2.02E+09	20.23333
1996	48.51685	5.098251	2.56E+09	19.83667
1997	44.13767	5.52464	3E+09	17.795
1998	33.55938	4.091135	2.76E+09	18.18417
1999	37.85794	5.218642	2.52E+09	20.29
2000	52.20539	7.107733	3.26E+09	21.27417
2001	40.87179	7.471653	3.35E+09	23.43833
2002	30.51809	7.20889	4.15E+09	24.77083
2003	36.75029	10.4405	6.71E+09	20.71417
2004	42.09065	12.49076	6.5E+09	19.18083
2005	43.50783	17.8801	6.14E+09	17.94833
2006	41.91683	17.51061	1.2E+10	16.9
2007	40.65207	19.26951	1.54E+10	16.93917
2008	41.48267	23.7739	1.73E+10	15.47983
2009	34.20516	19.59307	2.05E+10	18.36167
2010	24.91047	25.98817	6.38E+10	17.585
2011	27.83723	31.45384	6.68E+10	16.01667
2012	26.72293	28.01899	6.87E+10	16.7925
2013	25.33391	25.99839	7.67E+10	16.7225
2014	24.24768	1.490915	8.98E+10	16.54833
2015	24.32468	6.45	9.98E+10	8.916667

Table 1
Source: CBN Statistical Bulletin (2016) and World Development Indicators (2016).

3.2. Results

The result of the regression analysis for the first session (1981-1994) of the period under consideration is given below:

Dependent Variable: IVAG				
Sample: 1981 1994				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-110.5664	46.79758	-2.362653	0.0398
INTR	0.639585	0.429902	1.487745	0.1677
LOG(GFC)	6.404792	1.986556	3.224068	0.0091
LOG(EO)	3.058706	2.725185	1.122385	0.2879
R-squared	0.770608	Mean dependent var		37.27871
Adjusted R-squared	0.701791	S.D. dependent var		7.818154
S.E. of regression	4.269381	Akaike info criterion		5.975771
Sum squared resid	182.2761	Schwarz criterion		6.158359
Log likelihood	-37.83040	Hannan-Quinn criter.		5.958869
F-statistic	11.19784	Durbin-Watson stat		1.494402
Prob(F-statistic)	0.001546			

Table 2

The result of the regression analysis for the second session (1995-2015) of the period under consideration is given below:

Dependent Variable: IVAG				
Sample: 1995 2015				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	207.6339	31.90873	6.507120	0.0000
INTR	-1.130564	0.596602	-1.895005	0.0752
LOG(GFC)	-6.655012	1.049282	-6.342445	0.0000
LOG(EO)	1.791140	1.482354	1.208307	0.2435
R-squared	0.733391	Mean dependent var		36.55550
Adjusted R-squared	0.686342	S.D. dependent var		8.632400
S.E. of regression	4.834588	Akaike info criterion		6.159112
Sum squared resid	397.3451	Schwarz criterion		6.358069
Log likelihood	-60.67068	Hannan-Quinn criter.		6.202291
F-statistic	15.58793	Durbin-Watson stat		1.666510
Prob(F-statistic)	0.000039			

Table 3

3.3. Interpretation of Results

3.3.1. First Session (1981-1994)

The analysis of the first session produced an R^2 of 77%, meaning that 77% of the changes in industry value added is explained by the variables in the model (economic openness, interest rate, and gross fixed capital), while the remaining 23% is explained by variables not included in the model, but accounted for by the disturbant term U. It can also be seen from the results that the major regressor in consideration (EO) has a positive relationship with industry value added, however, its impact is insignificant on a 5% level of confidence.

3.3.2. Second Session (1995-2015)

The analysis of the second session produced an R^2 of 73%, meaning that 73% of the changes in industry value added is explained by the variables in the model (economic openness, interest rate, and gross fixed capital), while remaining 27% is explained by variables not included in the model, but accounted for by the disturbant term U. It can also be seen that the major regressor in consideration (EO) has a positive relationship with industry value added, but despite its high levels during this period, the impact is still insignificant on a 5% level of confidence.

4. Conclusion

The results of this analysis concur with the findings of Akinmulegun and Oluwole (2013) (as well as that of other scholars with similar findings), but against those of Blalock and Gertler (2008), Damijan et al (2003), and Fosu and Magnus (2006) (as well as that of other scholars with similar findings). This insignificant impact of globalization on the industrial sector of Nigeria (regardless of how high the degree of openness of the economy) could be accrued to such factors as the nation's inability to keep up with global trends, in terms of quality, technology and innovation, and overall changes in global needs. This has been a crutch holding back Nigeria's industrial development for so many years.

Another heavy cross still on the back of the nation's industrial sector is a sum of inadequate power supply, lack of funding, high taxes, poor infrastructure (overall), high interest rates, and continuous devaluation of the naira (among other things) resulting in high exchange rates that grossly hinder industrial development, mainly because the Nigerian industrial sector is still heavily dependent on foreign technological inputs. It is thus from this researcher's point of view that a developing nation which cannot stand on its feet when it comes to supplying basic needs (such as power and adequate infrastructure) for a thriving industrial sector will fall behind on global trends, thereby making it difficult to compete with the global market; thus justifying the inability of globalization to make a significant positive impact on its industrial sector.

The industrial sector needs to bring about multiplier effects on the economy so the sector can be in a better position to gain from globalization. This implies, better policies put in place (and properly executed), the education system needs to be properly structured to involve more technical practices so as to develop the technological know-how of the citizenry to study imported technology and create whole replicas or spare parts, thereby importation and production costs for industries. This will also require adequate funding and support from the government, to create programmes that will adequately correct the recurring issues plaguing the industrial sector of Nigeria.

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