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Impact of the Industrial Sector on Sustainable Economic Development in Nigeria

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Abstract

The study attempts to examine the relationship between the industrial sector and sustainable economic development in Nigeria. The methodology adopted for the study is the multiple regression Ordinary Least Square using data obtained from secondary source of CBN Statistical Bulletin. The result revealed that unit root (ADF) test indicates that the entire variables were stationary at level. However, the entire independent variables have long run relationship with real gross domestic product (RGDP) and economic growth in Nigeria within the sample period using the co- integration test. Based on these findings, the industrial sector can be seen to have contributed positively to the gross domestic product and the economy at large. The research recommends among others; that there is need for government to mobilize finances through the Bank of Industry (BOI) and create flexible channels for accessing the funds so as to revolutionize the Industrial sector. Government needs to sustain the present consultations with the private sector by providing incentives and the enabling environment to stimulate and foster the survival and sustainable growth of the industrial sector and the economy at large.

Keywords: *Industrialization, Economic development, Sustainable development*

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Background to the Study

The Nigerian economy is sequentially structured in such a way that it is dominated by the oil and gas, agriculture and then industry. This implies that the industrial sector comes third place in terms of contribution to growth. The oil and gas sector contributes to 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, & Ogundele, 2016) they found that Nigerian economy is driven by the oil and gas sector accounting for 95% of export earnings and 85% of government revenue. However, the industrial sector which is consisting of mining, manufacturing and services accounting for a tiny portion of 10% of the economy.

The industrial sector is expected to contribute to the economic growth, create jobs, incomes, wealth, and contribute to the standard of living of the populace. The industrial sector is very critical to the development of any country (Noko, 2016; Anyanwu 2001). It is a catalyst that accelerates the pace of growth, structural transformation and diversification of the economy, while enabling the country to fully utilize its factor endowments. Industrialization is a driver of structural transformation and diversification of economies, which enables full utilization of factor endowments.

Despite the relevance of the industrial sector as seen above, the Nigerian economic indicators showed that Gross Domestic Product (GDP) growth rate in2017 was 3.23% and annual GDP growth rate was 0.55%. GDP at constant prices wasN16,450,433 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). This situation is as a result of inadequate industrialisation policies, etc.

The industrial sector 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. To this end, the Bank of Industry (BOI) was established to lend to the industries, while Bank of Agricultural was set up to facilitate the availability of primary industrial inputs through the provision of medium to long term funds for agriculture and agro-allied industries (Dagogo, 2014). Also, Small and Medium Industries Equity Investment Scheme (SMIEIS) was established in 2000 to coordinate the scheme with a guideline that 60% of the SMIEIS fund should be used for core real sector, 30% to services, and 10% to micro enterprises through NGOs (Nyor & Chinge, 2014). Therefore, this study seeks to examine the impact of the industrial sector in the Nigerian economy in terms of sustainable growth. This Paper is divided into five sections; section one covers the introduction and the objectives of the study, section two examined the reviews of literature and theoretical review, section three is the methodology, section four is the results and findings of the study and section five wrapped up the study, conclusion and recommendation.

Literature Review

Concept of Industrialization

Industrialization is a concept of particular interest and as such has been given definition by various reputable scholars at different periods and economic spheres in time. Conceptually, industrialization is about the introduction and expansion of industries in a particular place, region or country (Obioma & Ozughalu, 2005). It is a situation where many industries are established in different parts of the country. As many industries are established in a country many different types of products are produced. Industrialization therefore, is a process of building up a country's capacity to produce many varieties of products – extraction of raw materials and manufacturing of semi finished and finished goods.

Anyanwu (2001) describes industrialization as the ability of an economy to to convert raw materials and other inputs to finished goods and to manufacture goods for other production or for final consumption. Industrialization enhances the utilization of productive inputs (labour, capital and raw materials), given the country's technology, to produce non-durable and durable consumer goods and intermediate goods for domestic consumption, export or further production. Thus industrialization could be described as the process of transforming raw materials, with the aid of human resources and capital goods into (a) consumers goods, (b) new capital goods which allows more consumers goods (including food) to be produced with the same human resources, and (c) social overhead capital, which together with human resources provides new services to both individuals and business (Ekpo, 2005).According to Online English Dictionery industrialization means 'a process of social and economic change whereby a human society is transformed from a pre-industrial to an industrial state.'

Walton (1987) defined industrialization as a shifts from an agricultural to a manufacturing base during a period of sustained change and growth, eventually creating a higher standard of living". According to him, Sociology's founders were keenly interested in the causes, correlates, and consequences of industrialization, which they considered a major growth in the broader social transformation producing modern society. They drew on miscellaneous concepts and observations to compile profiles of industrial society featuring traits such as a division of labour, rationalization, the systematic application of science, urbanization, increased life expectancy, literacy, higher standards of living, and democracy.

Concept of Economic Development

Development in human society is a many-sided process. At the level of the individual, it implies increased skill and capacity, greater freedom, creativity, self-discipline, responsibility and material well-being. A society develops economically as its member's increase jointly their capacity for dealing with the environment. This capacity for dealing with the environment is dependent on the extent to which they understand the laws of nature (science), on the extent to which they put that understanding into practice by devising tools (technology), and on the manner in which work is organized (Rodney, 1973).

Jhingan (1997) stated that economic growth happens when an economy improves on its productive capacity, which in turn affects the increase in output in terms of goods and

services. He stressed that economic growth can be measured through increase in the amount of goods and services that are produced in a country. Therefore, a growing economy produces more goods and services each successive time period. Economic development according to Alan, (2010) is the "Sustained increase in the economic standard of living of a country's population, normally accomplished by increasing its stocks of physical and human capital and improving its technology." At the local level, the term is brought to a more reachable level. Amartya (1999) considers economic development to be "the strengthening of autonomy and substantive freedoms, which allow individuals to fully participate in economic life." Hence, economic development occurs when individual agent has the opportunity to develop the capacities that allow them to actively engage and contribute to the economy. In the aggregate, this should lower transaction costs and increase social mobility.

Economic development is the expansion of capacities that contribute to the advancement of society through the realization of individual, firm and community potential. Economic Development is measured by a sustained increase in prosperity and quality of life through innovation, lowered transaction costs, and the utilization of capabilities towards the responsible production and diffusion of goods and services. Economic development requires effective institutions grounded in norms of openness, tolerance for risk, appreciation for diversity, and confidence in the realization of mutual gain for the public and the private sector. Economic development is essential to creating the conditions for economic growth and ensuring our economic future (Feldman, Hadjimichael, Kemeny, & Lanahan, 2014).

Theoretical framework

This study adopted the Mercantilist theory. The Mercantilist theory as propounded from the 16th to 18th century. The proponents of mercantilism were French Controller General of Finance Jean-Baptiste Colbert 1619-1683). Thomas Mun (1571–1641) as a major creator of the mercantile system, Gerard de Malynes (1585–1641), and Josiah Child (1630/31 – 1699) in Great Britain.

The fundamental objective of mercantilism (nationalist; structuralism or protectionism) is industrialization (Sen 1984). This is why in the first place they believe that industry has spill over effects (externalities) throughout the economy and leads to its overall development. Secondly, they associate the possession of industry with self-sufficiency. This is why, the mercantilist theorist of American economic development, Alexander Hamilton wrote 'not only the wealth but the independence and security of the country appear to be materially connected to the prosperity of manufacturers (Rostow, 1971). The position here is that; government should always make policies to regulate the operation of the industry because it is the commanding height of the state.

Empirical Review

Jelilov, Enwerem and Isik (2016) carried out a study set on 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 revealed that industrialization has a negative impact on economic growth in Nigeria in the long run. 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.

Mandaraand Ali (2018) examined the impact of industrialization on economic growth in Nigeria for the period spanning from 1981 to 2015. They identified industrialization as the principal solution to the complex problems of Nigeria as well as other under-developed countries and it is the main key to economic growth. However, they concluded that by any standard, Nigeria would be classified as industrially under developed, as effort that has been put into the industrialization process in the past years has exerted minimal impact on the output growth of the economy.

A very elaborate study by Haraguchi, Cheng, & Smeets (2017) of both developed and developing countries shows that the industrialization driven growth is still potent for developing countries despite the recent claims of dwindling manufacturing development and the reduction in the relevance of manufacturing for economic development and transformation.

Zhao and Tang (2017) examine the sources of economic growth in China in comparison to Russia between the period 1995 and 2008. They find that the rise in economic growth in China over the period was to a large extent contribution from the manufacturing sector, and to a lesser extend the service sector. However in Russia, growth was to a large extend driven by the service sector, followed by the primary sector.

Eric, Opokuaand Edem (2016), examine the impact of industrialization on economic growth in Africa, and also how trade openness augments this effect. They consider the study of industrialization imperative following recent commitments of African governments and the African Development Bank to it, and also it being a core part of the Sustainable Development Goals. Employing data for the period 1980-2014 from 37 African countries and the generalized method of moments (System GMM), they showed two main results; first, industrialization has on its own boosted economic growth in Africa. Second, trade openness augments the effect of industrialization on economic growth. Their results therefore indicate that the commitments to industrialization are calls in the right direction. They serve as a major signal for African governments to initiate and intensify policies of export promotion, providing requisite infrastructure (such as power, transportation and telecommunication) and also promoting entrepreneurship in the industrial sector especially among the youth.

Methodology

The research work is on the industrial sector and its contribution towards ensuring sustainable development in Nigerian and the period under consideration is 1981 to 2016. Secondary and time series data will be used in the research analysis. The data are obtained from the following

sources: Central Bank of Nigeria Statistical Bulletin for various years, Central Bank of Nigeria Annual Account, Central Bank of Nigeria (CBN) Economic and financial Review, and publications of National Bureau of Statistics 2017.

For the purpose of the analysis, the researchers adopted the multiple regression method based on the Ordinary Least Square (OLS) technique. The choice of this method is in consideration of the statistical properties of OLS estimators which met the best, linear, unbiased estimate (BLUE) assumption. They are point estimators; that is, given the sample, each estimator will provide only a single (point) value of the relevant population parameter. Another comfort is that once the OLS estimates are obtained from the sample data, the sample regression line can be easily obtained(Gujarati, 2004).

RGDP= f (INDPR, CF, MS) ……..…….…….. (1)

Where;
RGDP = Real Gross Domestic Product
INDPR = Index of Industrial Production
CF = Capital Formation
MS = Money Supply

This can as well be expressed in a linear function as:
$RGDP = bo + b_1INDPR + b_2CF + b_3MS + u_t$……...(2)

Where;
b_o = constant term/parameter intercept
b_1, b_2, andb_3 = coefficients of the parameters estimates.
u_t= Error Term
Apriori Expectation: $B_0 > 0$, $B_1 > 0$, $B_2 > 0$, and $B_3 > 0$.

Results and interpretation
Table 1: Augmented Dickey Fuller Unit root Result at Level and First Difference

Variables	ADF Statistic Level	1st difference	Critical value (1%)	Critical value (5%)	Order of integration	Remarks
D(RGDP)	-4.961755	-	-3.6329	-2.9484	I(0)	Stationary
D(INDPR)	-5.555834	-	-3.6394	-2.9511	I(0)	Stationary
D(CF)	-6.909600	-	-3.6892	-2.9719	I(0)	Stationary
D(MS)	-5.230003	-	-3.6701	-2.9640	I(0)	Stationary

Source: Author's compilation, (2018)

Stationarity Test: This test was conducted to know whether the mean value and variance of the variables are constant overtime. The unit root test using augmented dickey –fuller test was adopted under the following hypothesis.

$H_{0:}$ δ = 0 (Non- stationary)
H_1: δ < 0 (Stationary)

Decision Rule;
Reject H_0 if the absolute value of the calculated ADF is less than or more negative than the absolute value of 5% critical value (Verbeek, 2004). From the Table 1 above, the result reveal that all variables (RGDP,INDPR,CF,& MS) were stationary at level given the 5% level of significance, since the absolute value of the calculated ADF is less than or more negative than the absolute value of 5% critical value of the ADF. Hence, since the variables are stationary at the level, co-integration analysis is justified. We then proceed to conduct the long run relationship of the variables and their short term speed of adjustment to equilibrium.

Table 2: Cointegration Test

Series: RGDP INDPR CF MS
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.567814	77.65222	47.85613	0.0000
At most 1 *	0.455914	49.12968	29.79707	0.0001
At most 2 *	0.433712	28.43564	15.49471	0.0003
At most 3 *	0.234855	9.101452	3.841466	0.0026

Table 2 shows the cointegration test. This test is used to test for the long run relationship between the variables; it was carried out using the augmented eagle – Granger test on the residuals under the following hypothesis:
$H_{0:}$ δ = 0 (Not- cointegrated)
H_1 : δ ≠ 0 (cointegrated)

Decision Rule:
Given that the p-value of the Trace statistic (0.0000, 0.0001, 0.0003 and 0.0026) are less than the level of significance of 0.05. This result shows that there is at most three (3) co-integrating equation hence, indicating that there is co-integration for the model. It implies that there is a sustainable long-run relationship (i.e. steady-stated path) between Real Gross Domestic Product (RGDP), industrial productivity index (INDPR), capital formation (CF) and Money supply (MS).

Table 3: Multiple Regression Analysis

Dependent Variable: RGDP
Method: Least Squares
Date: 11/16/17 Time: 15:18
Sample: 1981 2016
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	223227.7	23500.20	9.498971	0.0000
INDPR	0.364252	0.113209	3.217506	0.0030
CF	0.118018	0.038010	3.104952	0.0040
MS	0.011078	0.008714	1.271269	0.2128

R-squared	0.903127	Mean dependent var	463211.2
Adjusted R-squared	0.894045	S.D. dependent var	287613.7
S.E. of regression	93620.21	Akaike info criterion	25.83632
Sum squared resid	2.80E+11	Schwarz criterion	26.01227
Log likelihood	-461.0537	Hannan-Quinn criter.	25.89773
F-statistic	99.44330	Durbin-Watson stat	0.782573
Prob(F-statistic)	0.000000		

Source: Author's computation (2018)

From the regression result in Table 3, the value of the constant b_0 (223227.7) as the contribution of other economic variable (sectors) to the Real Gross Domestic Product (RGDP) when Industrial productivity (INDPR), Capital formation (CF) and Money supply (MS) are assumed to be zero. The positivity of the value means that those other sectors of the economy contribute favourably to the Real Gross Domestic Product (RGDP) in Nigeria.

The coefficient of Industrial productivity (INDPR) is also positive, meaning that there is positive and direct relationship between the Real Gross Domestic Product and Industrial productivity. This explains our expectation and implies that a 1% change in Industrial productivity will lead to 0.364252 changes in the Real Gross Domestic Product, other variables remaining constant.

The result also shows positive values of 0.118018 and 0.011078 for Capital formation (CF) and Money supply (MS) respectively. This implies that there is a positive and direct relationship between the two variables and the Real Gross Domestic Product and therefore, a 1% change in Capital formation and Money supply will lead to 0.118018 and 0.011078 change in the Real Gross Domestic Product other variables assume constant.

The computed R^2 value (0.903127) of which is the coefficient of multiple determinations indicates that the model satisfies the requirement for goodness of fit. The value 90.31% shows that the variation in the real gross domestic product (RGDP) are explained by the variation of the explanatory variables namely; industrial productivity index (INDPR), capital formation (CF) and Money supply (MS), while the remaining 9.69 % is explained by variable not included in the model.

Furthermore, the joint influence of the explanatory variables on the dependent variable is statistically significant. This is also confirmed by the F-probability which is statistically zero i.e. the P-value of F-statistics is less than 5%. The Heteroscedasticity- and autocorrelation-consistent (HAC) was conducted to correct for auto-correlation (Gujarati, 2014).

Given that there is positive and significant relationship between the Real Gross Domestic Product and Industrial productivity, this result is consistent with work of Mandaraand Ali (2018) who examined the impact of industrialization on economic growth in Nigeria for the period spanning from 1981 to 2015. They identified industrialization as the principal solution to the complex problems of Nigeria as well as other under-developed countries and it is the main key to economic growth. A similar result was found from the study of Haraguchi, Cheng, & Smeets (2017). They showed that industrialization driven growth is potential for developing countries despite its dwindling manufacturing outputs.

Conclusion and Recommendations

From the regression result, it was found that Industrial productivity positive and significantly influence economic growth in Nigeria as at the period under review. Also, Capital formation and Money supply which are the control variables, impacted on economic growth positively and at a significant rate. Based on these results, the study recommends that the government must step up support to the industrial sector and improve on its celebrated ease of doing business. Also, the Industrial Core Projects (ICPs), especially Ajaokuta Iron and Steel Plants embarked upon by the government should be completed or rehabilitated and made to function properly to full capacity.

To address the most critical problem of the industrial sector, government should as a matter deliberate policy invest massively in infrastructural facilities such as power, roads and rail systems, while launching a serious campaign on the need to patronise locally produced goods. To disperse industries and ensure even development, industrial development should also be extended to the rural areas. Government industrialization policies should be reinvigorated to provide the much needed conducive business environment and attract foreign direct investment in to the country.

Contribution/Originality: This study is based on the industrial sector in Nigeria. The policy of industrialization in Nigeria is to reinvigorate the sector, enhance the conducive business environment and attract foreign direct investment in to the country. The contribution of this study shows that the industrial productivity positive and significantly influence economic

growth in Nigeria. The study recommends enhancing infrastructural facilities to boost industrial sector in Nigeria.

References

Alan G. (2010). Economic diversification in resource rich countries' center for global development, *Natural Resources, Finance, and Development: Confronting Old and New Challenges,* organized by the Central Bank of Algeria and the IMF Institute in Algiers, on 4–5 November. 1-24.

Amartya S. (1999). Development as freedom*, Graduate Journal of Social Science, 1(2)*, 23-41.

Anyanwu, C.M. (2001). Productivity in the Nigerian manufacturing industry, *Research Department, Central Bank of Nigeria Pp 124-135.*

Chete, L. N., Adeoti, J. O. & Ogundele, O. (2016). *Industrial development and growth in Nigeria: Lessons and challenges.* Learning to Compete. Working paper No.2.

Dagogo, D.W. (2014). Nigerian industrial development between 1943 and 2013: Challenges and Opportunities. *An online International Research, 1,* 2-24 retrieved from http//www.globalbizresearch.org.on 23 August 2018.

Ekpo, A.H. (2005). Foreign direct investment in Nigeria: Evidence from time series data. *Journal of Economic and Financial Review, (13),* (34-49.

Eric E. O.,Opokua, I. K. Y., & Edem K. M. K. (2016). *Industrialization drive and economic growth in Africa,* City University of Hong Kong, University of Texas at San Antonio, Texas, USA

Feldman, M., Hadjimichael, T., Kemeny, T., & Lanahan, L. (2014). *Economic development: A Definition and model for investment,* North Carolina: University of North Carolina, Chapel Hill.

Gujarati, D.N. (2014). *Basic Econometrics,* New Delhi: Tata McGraw Hill Publishing Company.

Haraguchi, N., Cheng, C. F. C., & Smeets, E. (2017). The importance of manufacturing in economic development: has this changed? *World Development*, 93, 293–315. https://doi.org/10.1016/j.worlddev.2016.12.013

Jelilov, G., Enwerem, H. I., & Isik, A. (2016). The impact of industrialization on economic growth: The Nigeria experience (2000-2013), *British Journal of Advance Academic Research.* 5, 11-20.

Jhingan, M.L (1997). *Macroeconomic theory*, Delhi: Vrinda publishing.

Mandara, B.,& Ali, M.B. (2018). Appraisal of the impact of industrialization on economic growth in Nigeria, *Journal of Business and Management,* 20 (1), 1-10.

Noko E.J. (2016). Impact of industrial sector on Nigeria economic growth. *A Research centre Project*, http://educacinfo.com. Retrieved April 27th, 2017.

Nyor, G.A., & Chinge A.D. (2014). The impacts of industrial policies on the manufacturing sector in Nigeria, *Research on Humanities and Social Science,4 (21),* 82-101. Retrieved online from http://www.iiste.org on July 15th , 2017.

Rodney, W. (1973). *How Europe underdeveloped Africa,* London: Bogle-L'Ouverture Publications, London and Tanzanian Publishing House.

Rostow, W. W. (1971). *Politics and stages of growth*, New York: Cambridge University press.

Sen, G. (1984). *The military origins of industrialization and international trade rivalry*, New York: St. Martin's press.

Verbeek, M. (2004). *A guide to modern econometrics*: *2nd Edition*. West Sussex, England: John Wiley and Sons .

Walton, J. (1987). Theory and research on industrialization, *Annual Review of Sociology* 13, 89-108

Yu, X., Dosi, G., &Grazz, M., & Lei, J. (2017). Inside the virtuous circle between productivity, profitability, investment and corporate growth: An anatomy of Chinese industrialization. *Research Policy*, *46*, 1020-1038

Zhao, J., & Tang, J. (2017). Industrial structure change and economic growth: A China-Russia comparison, *China Economic Review*, 0–1. https://doi.org/10.1016/j.chieco.2017.08.008

Appendix I
Data for Analysis (1981 – 2016)

YEAR	RGDP (₦' Million)	INDPR (₦' Million)	CF (₦' Million)	MS (₦' Million)
1981	205,222.06	4699.95	7138.00	14471.17
1982	199,685.25	5047.61	10199.00	15786.74
1983	185,598.14	554296	10014.00	17687.93
1984	183,562.95	484751	11925.00	20105.94
1985	201,036.27	6422.64	17444.00	22299.24
1986	205,971.44	4699.95	23571.00	23806.40
1987	204,806.54	7468.45	27718.00	27573.58
1988	219,875.63	11017.78	20525.00	38356.80
1989	236,729.58	12475.51	21560.00	45902.88
1990	267,549.99	14702.40	33444.00	52857.03
1991	265,379.14	19356.00	39270.00	75401.18
1992	271,365.52	27004.01	41770.00	111112.3
1993	274,833.29	38987.14	49029.00	165338.8
1994	275,450.56	62897.69	40398.00	230292.6
1995	281,407.40	105289.59	42074.00	289091.1
1996	293,745.38	132897.06	49564.00	345854.0
1997	302,022.48	144106.95	49515.00	413280.1
1998	310,890.05	141496.44	78089.00	488145.8
1999	312,183.48	150946.52	84935.00	628952.2
2000	329,178.74	168037.02	123509.0	878457.3
2001	356,994.26	199079.32	256523.0	1269322.
2002	433,203.51	236825.53	426163.0	1505964.
2003	477,532.98	287739.38	451850.0	1952921.
2004	527,576.04	349316.32	621717.0	2131819.
2005	561,931.39	412706.60	973526.0	2637913.
2006	595,821.61	478524.14	1021967.	3797909.
2007	634,251.14	520883.03	1367954.	5127401.
2008	672,202.55	585573.04	2615020.	8008204.
2009	718,977.33	612308.89	3535631.	9411112.
2010	776,332.21	647822.79	1739365.	11034941
2011	834,161.83	678123.45	1925478.	12172490
2012	888,893.00	732437.61	2156489.	13895389
2013	995,821.61	778472.14	2231967.	4797909.
2014	984,231.15	820103.03	2367454.	5612741.
2015	1,072,202.00	884173.04	2637420.	9808204.
2016	1,118,977.13	912328.12	3353531.	10214312.

Source: Various CBN Statistical Bulletins

Appendix II
Unit Root Test RGDP

Null Hypothesis: RGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.961755	1.0000
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP)
Method: Least Squares
Date: 11/21/17 Time: 15:32
Sample (adjusted): 1982 2016
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	0.070405	0.014190	-4.961755	0.0000
C	-5185.956	7340.829	-0.706454	0.4849

R-squared	0.427272	Mean dependent var	26107.29
Adjusted R-squared	0.409917	S.D. dependent var	28930.43
S.E. of regression	22223.45	Akaike info criterion	22.91113
Sum squared resid	1.63E+10	Schwarz criterion	23.00001
Log likelihood	-398.9448	Hannan-Quinn criter.	22.94181
F-statistic	24.61901	Durbin-Watson stat	2.315789
Prob(F-statistic)	0.000021		

Unit Root Test INDPR

Null Hypothesis: D(INDPR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.555834	0.0001
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INDPR,2)
Method: Least Squares
Date: 11/21/17 Time: 15:39
Sample (adjusted): 1983 2016
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INDPR(-1))	-0.981378	0.176639	-5.555834	0.0000
C	26203.03	22993.26	1.139596	0.2629

R-squared	0.490991	Mean dependent var	817.8653
Adjusted R-squared	0.475085	S.D. dependent var	181362.2
S.E. of regression	131398.8	Akaike info criterion	26.46688
Sum squared resid	5.53E+11	Schwarz criterion	26.55667
Log likelihood	-447.9370	Hannan-Quinn criter.	26.49750
F-statistic	30.86730	Durbin-Watson stat	1.438978
Prob(F-statistic)	0.000004		

Unit Root Test CF

Null Hypothesis: CF has a unit root
Exogenous: Constant
Lag Length: 7 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.909600	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CF)
Method: Least Squares
Date: 11/21/17 Time: 15:47
Sample (adjusted): 1989 2016
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CF(-1)	-7.258452	1.050488	-6.909600	0.0000
D(CF(-1))	6.405164	0.953903	6.714693	0.0000
D(CF(-2))	7.936739	1.205444	6.584080	0.0000
D(CF(-3))	6.370335	0.943383	6.752653	0.0000
D(CF(-4))	7.034310	1.038084	6.776246	0.0000
D(CF(-5))	11.68193	1.696557	6.885670	0.0000
D(CF(-6))	5.080464	0.769024	6.606375	0.0000
D(CF(-7))	23.52670	3.349188	7.024599	0.0000
C	218717.0	69053.77	3.167344	0.0051

R-squared	0.774097	Mean dependent var	119035.9
Adjusted R-squared	0.678979	S.D. dependent var	481310.1
S.E. of regression	272704.0	Akaike info criterion	28.12525
Sum squared resid	1.41E+12	Schwarz criterion	28.55346
Log likelihood	-384.7535	Hannan-Quinn criter.	28.25616
F-statistic	8.138339	Durbin-Watson stat	1.870183
Prob(F-statistic)	0.000092		

Unit Root Test MS

Null Hypothesis: MS has a unit root
Exogenous: Constant
Lag Length: 5 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.230003	1.0000
Test critical values:	1% level	-3.670170	
s	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MS)
Method: Least Squares
Date: 11/21/17 Time: 15:49
Sample (adjusted): 1987 2016
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS(-1)	0.982141	0.187790	-5.230003	0.0000
D(MS(-1))	-0.766252	0.160615	-4.770733	0.0001
D(MS(-2))	-1.098226	0.131859	-8.328798	0.0000
D(MS(-3))	-0.180276	0.108064	-1.668231	0.1088
D(MS(-4))	0.469689	0.658743	0.713008	0.4830
D(MS(-5))	-6.884167	0.689840	-9.979362	0.0000
C	220822.9	207855.8	1.062385	0.2991

R-squared	0.853016	Mean dependent var	339683.5
Adjusted R-squared	0.814672	S.D. dependent va r	2024145.
S.E. of regression	871389.1	Akaike info criterion	30.39453
Sum squared resid	1.75E+13	Schwarz criterion	30.72147
Log likelihood	-448.9179	Hannan-Quinn criter.	30.49912
F-statistic	22.24654	Durbin-Watson stat	2.306397
Prob(F-statistic)	0.000000		